

AN INITIAL INVESTIGATION INTO METHODS OF COMPUTING
TRANSONIC AERODYNAMIC SENSITIVITY COEFFICIENTS



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TEXAS ENGINEERING EXPERIMENT STATION

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I. Introduction

This report covers approximately the period from July 1990 thru December 1990. During this reporting period, work has continued on studies necessary to develop the "quasi-analytical" sensitivity method for three dimensional transonic flow about wings. In addition, initial numerical investigations have been carried out and some very preliminary results obtained.

II. Personnel

The individuals associated with this project during the present reporting period have been Dr. Leland A. Carlson, Principal Investigator, and Hesham Elbanna, Graduate Research Assistant. Mr. Elbanna has been partially supported by the project during this period.

III. Research Progress

The efforts during the past six months and the current status of the project are summarized by a report prepared by Mr. Elbanna and contained herein as Appendix I. (Note that Appendix I contains subappendices A thru D.) As can be seen from this appendix, the primary effort has been the continued development of the three-dimensional quasi-analytical sensitivity analysis and the ancillary driver programs needed to carry out the studies and perform comparisons. Currently, the code is essentially contained in one unified package which includes the following:

- (a) A three dimensional transonic wing analysis program (ZEBRA),

(b) A quasi-analytical portion which determines the matrix elements in the quasi-analytical equations,

(c) A method for computing the sensitivity coefficients from the resulting quasi-analytical equations,

(d) A package to determine for comparison purposes sensitivity coefficients via the finite difference approach, and,

(e) A graphics package.

The total program currently consists of about ten thousand FORTRAN statements, although it is hoped that this can be shortened significantly as the research progresses. Further, in the portion which determines the matrix elements, a major portion of the code from a time standpoint is for each grid only run once to determine symbolic logic that indicates where the non-zero elements are in the matrix. Once this portion is executed, a typical run requires 2-3 min for the transonic analysis, about 10 min for the quasi-analytical setup and solution (relatively independent of the number of design variables), about 2-3 minutes for a finite difference sensitivity analysis for each design variable, plus the time associated with graphical output. These times are all for the IBM 3090 at the TAMU Computer Services Center.

Thus, at this point the quasi-analytical approach and the finite difference approach each require about the same amount of computer time if only two design variables are considered. However, as the number of design variables is increased and as the quasi-analytical method is made more efficient, it is anticipated that the latter approach will be faster and more efficient.

One of the advances made during the last six months has been the investigation of various solvers for the sensitivity equations. As a result, the present scheme now uses an iterative conjugate gradient method and the generalized minimum residual algorithm (GEMRES). These

approaches appear to be very efficient and for the present test case only require a total memory for the entire code of 40 Mb. (Note that in the Appendix I, it is stated that the memory requirements are 90Mb. The larger value was initially used to ensure adequate allocation. However, it has since been determined that 40Mb at the most is actually needed.)

As indicated in Appendix I, some very preliminary results have been obtained with both the finite difference approach and the quasi-analytical method. However, as can be seen by looking at the results, the current quasi-analytical results are in error. Since this appendix was prepared, an error has been discovered in the coding for the determination of the quasi-analytical matrix elements associated with the wing boundary conditions and the wake. Consequently, the various MACSYMA codes are being re-run in order to generate the "correct" FORTRAN code. However, this is a lengthy process; and new results will probably not be available for this report.

In any event, it is believed that steady progress is being made and that useful results will be obtained soon.

IV. Project Status

During this period, additional funds were awarded to the Grant to cover the period 1 June 1990 thru 31 December 1990; and a renewal proposal to cover another twelve months was submitted. Subsequently, the facilitate interfacing with the renewal, the present period was extended thru February 28th 1991. It is anticipated that the renewal funds will be available March 1, 1991.

V. Future Efforts

During the next six months, work will continue on developing the quasi-analytical approach. In addition to debugging the program etc. and obtaining correct answers, emphasis will be placed on making the quasi-analytical method more efficient with respect to both CPU time and storage requirements. Further, work will be initiated to handle additional design variables, to extend the method to transonic and supersonic freestreams, and to generalize the geometry specification. Also, after appropriate discussions with personnel at NASA Langley Research Center, consideration will be given to developing the quasi-analytical approach for a three-dimensional small perturbation potential code, which would be supplied by NASA Langley. The latter effort would allow comparison with the sensitivity results obtained using a full potential code.

VI. Technical Monitor

The technical monitor for this project is Dr. E. Carson Yates, Jr., Interdisciplinary Research Office, NASA Langley, Research Center.

APPENDIX I

Determination of Aerodynamic Sensitivity Derivatives Based on the Full Potential Equation

H. M. Elbanna

January 1991

DETERMINATION OF AERODYNAMIC SENSITIVITY DERIVATIVES BASED ON THE FULL POTENTIAL EQUATION

Prof. L.A. CARLSON

H.M. ELBANNA, (January, 1991)

Nomenclature

ANOFI	Boundary condition term $ANOFI(j, k)$
AJ1, AJ2	Metric functions $AJ1(j), AJ2(j)$
A1K, A2K	Metric functions $A1K(k), A2K(k)$
Cp	Pressure coefficient
c(y)	Chord function
CIR	Circulation $CIR(j)$
DPU	Wing upper surface boundary term
DPLO	Wing lower surface boundary term
DXII	Metric function $DXII(i)$
ILE	I-location of leading edge
ITE	I-location of trailing edge
J	Jacobian X_x
KUP	K-location of plane above wing
KLOW	K-location of plane below wing
M	Local Mach number $M_{i,j,k}$
M_c	Cutoff Mach number $0.94 \geq M_c \leq 1.0$
M_∞	Freestream Mach number
P_∞	Freestream pressure, nondimensionalized by $[2\gamma/(\gamma + 1)]P_0$
P_0	Stagnation pressure
q_∞	Freestream velocity, nondimensionalized by V^∞
RIP	Retarded density coefficient $RIP(j, k) = \bar{\rho}_{i+1/2,j,k}$
RIM	Retarded density coefficient $RIM(j, k) = \bar{\rho}_{i-1/2,j,k}$
RJP	Retarded density coefficient $RJP(j, k) = \bar{\rho}_{i,j+1/2,k}$
RJ	Retarded density coefficient $RJ(j, k) = \bar{\rho}_{i,j-1/2,k}$
RKP	Retarded density coefficient $RKP(j, k) = \bar{\rho}_{i,j,k+1/2}$
RK	Retarded density coefficient $RK(j, k) = \bar{\rho}_{i,j,k-1/2}$
R1K	Modified retarded density coefficient for wing upper surface
R1KU	Modified retarded density coefficient for wing lower surface
R2KW	Modified retarded density coefficient for wake upper surface
R2KP	Modified retarded density coefficient for wake lower surface
U, V, W	Contravariant velocity components in computational plane
x, y, z	Physical grid system
X, Y, Z	Computational coordinates aligned with wing
xle(y)	Leading edge function
XD	Vector of design variables
ρ	Density, nondimensionalized by ρ_0
ρ_∞	Freestream density, nondimensionalized by ρ_0
ρ_0	Stagnation density
$\bar{\rho}$	Retarded density coefficient
$\delta()$	First order backward difference operator
α	Angle of attack
γ	Ratio of specific heats
σ	Switching function $\sigma = 1 - \nu$
ϕ	Reduced potential function
Φ	Full potential function

Introduction

In this progress report, work carried out during the period from July 1990 to December 1990 will be outlined. In addition, various overall steps and equations related to the three-dimensional sensitivity project will be listed herein for future reference. At this stage, it is helpful to distinguish two main phases that characterize the three-dimensional analysis/sensitivity project. Phase one of this research^{1,2} was concerned with modifying the analysis (ZEBRA) program to suit the sensitivity study, developing FORTRAN subroutines to calculate sensitivity derivatives using the finite-difference method, and, developing MAC-SYMA/FORTRAN algorithms to calculate the sensitivity coefficients using the quasianalytical method. These tasks were finalized by an assembly procedure that aimed at combining the above mentioned subroutines into one FORTRAN program. The main advantages of having a single FORTRAN program to carry out various analysis/sensitivity case studies are the minimization of disk read/write operations and the ability to debug/test/append any future additions to the entire project with ease, compatibility, and speed. The second phase of the project will be concerned with debugging operations, addition of design variables, increasing solver efficiency, and carrying out a variety of case studies. The sections covered in this report are as follows,

- Symbolic Differentiation of the Full Potential Residual Expression.
- Structure of the Analysis/Sensitivity FORTRAN Code.
- Linear Solvers for the Sensitivity Equation.
- Primary Results and Debugging Operations.
- Future Work.
- Further Theoretical Aspects.

It is to be noted that the following sections include the effort up to the current state of work progress, this state being at the junction between the first phase and the second phase of the analysis/sensitivity project.

Symbolic Differentiation of the Full Potential Residual Expression

Following the line of formulation adopted in the two-dimensional sensitivity study, the quasianalytical method applied to the three-dimensional full potential equation yields the sensitivity equation,

$$\left[\frac{\partial R_{i,j,k}}{\partial \phi_{ii,jj,kk}} \right] \left(\frac{\partial \phi_{ii,jj,kk}}{\partial XD} \right) = - \left(\frac{\partial R_{i,j,k}}{\partial XD} \right) \quad (1)$$

The residual expression of the full potential equation in conservative form (in the computational plane and using a shearing transformation) is written in terms of backward differences as,

$$R_{i,j,k} = \bar{\delta}_X \left(\frac{\rho U}{J} \right)_{i-1/2,j,k} + \bar{\delta}_Y \left(\frac{\rho V}{J} \right)_{i,j+1/2,k} + \bar{\delta}_Z \left(\frac{\rho W}{J} \right)_{i,j,k-1/2} \quad (2)$$

The density is replaced by the retarded density coefficient in order to maintain stability in regions of supersonic flow. Therefore, Eq.(2) is written as,

$$R_{i,j,k} = \bar{\delta}_X \left(\frac{\bar{\rho} U}{J} \right)_{i+1/2,j,k} + \bar{\delta}_Y \left(\frac{\bar{\rho} V}{J} \right)_{i,j+1/2,k} + \bar{\delta}_Z \left(\frac{\bar{\rho} W}{J} \right)_{i,j,k+1/2} \quad (3)$$

$$= \left[\left(\frac{\bar{\rho} U}{J} \right)_{i+1/2,j,k} - \left(\frac{\bar{\rho} U}{J} \right)_{i-1/2,j,k} \right] + \left[\left(\frac{\bar{\rho} V}{J} \right)_{i,j+1/2,k} - \left(\frac{\bar{\rho} V}{J} \right)_{i,j-1/2,k} \right] + \left[\left(\frac{\bar{\rho} W}{J} \right)_{i,j,k+1/2} - \left(\frac{\bar{\rho} W}{J} \right)_{i,j,k-1/2} \right] \quad (4)$$

In ZEBRA, Eq.(4) is coded as follows,

$$R_{i,j,k} = (FIP - FIM) + (FJP - FJM) + (FKP - FKM) + ANOFI \quad (5)$$

$$= [RIP \ U_{i+1/2,j,k} - RIM \ U_{i-1/2,j,k}] + [RJP \ V_{i,j+1/2,k} - RJ \ V_{i,j-1/2,k}] + [RKP \ W_{i,j,k+1/2} - RK \ W_{i,j,k-1/2}] + ANOFI \quad (6)$$

where

$$ANOFI(i,j,k) = \begin{cases} -A33M \ R1K \ DPU, & k = KUP, \ ILE \leq i \leq ITE \\ A33P \ R1KU \ DPLO, & k = KLOW, \ ILE \leq i \leq ITE \\ A33M \ R2KW \ CIR, & k = KUP, \ ITE < i \\ -A33M \ R2KP \ CIR, & k = KLOW, \ ITE < i \end{cases} \quad (7)$$

is the term that includes wing and wake boundary conditions. Note that the Jacobian is incorporated into the transformation coefficients of the contravariant velocity components. Next, the retarded density coefficients are given by,

$$RIP(i,j,k) = (1 - \nu_{i-1/2,j,k})\rho_{i+1/2,j,k} + \nu_{i+1/2,j,k}\rho_{i-1/2,j,k} \quad (8)$$

$$= \sigma_{i+1/2,j,k}(\rho_{i+1/2,j,k} - \rho_{i-1/2,j,k}) + \rho_{i-1/2,j,k} \quad (9)$$

$$RJP(i,j,k) = \frac{1}{2}(\bar{\rho}_{i,j,k} + \bar{\rho}_{i,j+1,k}) \quad (10)$$

$$RKP(i,j,k) = \frac{1}{2}(\bar{\rho}_{i,j,k} + \bar{\rho}_{i,j,k+1}) \quad (11)$$

where

$$\rho_{i,j,k} = \left[1 - \frac{\gamma-1}{\gamma+1}(U\Phi_X + V\Phi_Y + W\Phi_Z)\right]_{i,j,k}^{\frac{1}{\gamma-1}} \quad (12)$$

$$\nu_{i,j,k} = \min\left[1, \max\left(1 - \frac{M_c}{M_{i,j,k}^2}, 0\right)\right] \quad (13)$$

Notice that the retarded density coefficient $RIP(i,j,k)$ is evaluated only at the midsegment point $i + 1/2, j, k$ while the values at $i, j + 1/2, k$ and $i, j, k + 1/2$ [$RJP(i,j,k)$ and $RKP(i,j,k)$] are obtained by averages of the surrounding points. The Mach number is obtained from the following relation,

$$\frac{\rho_0}{\rho_{i,j,k}} = \left(\frac{T_0}{T}\right)^{\frac{1}{\gamma-1}} = \left(1 + \frac{\gamma-1}{2}M_{i,j,k}^2\right)^{\frac{1}{\gamma-1}} \quad (14)$$

and therefore,

$$M_{i,j,k}^2 = \frac{2}{\gamma-1}(\rho_{i,j,k}^{1-\gamma} - 1) \quad (15)$$

where $\rho_{i,j,k}$ is nondimensionalized by ρ_0 . From Eq.(15) into Eq.(13),

$$\nu_{i,j,k} = \begin{cases} 0, & M_{i,j,k} < 1 \\ 1 - \frac{(\gamma-1)M_{i,j,k}^2/2}{\rho_{i,j,k}^{1-\gamma} - 1}, & M_{i,j,k} > 1 \end{cases} \quad (16)$$

and therefore,

$$\nu_{i+1/2,j,k} = \begin{cases} 0, & M_{i,j,k} < 1 \\ 1 - \frac{(\gamma-1)M_{i,j,k}^2/2}{[(\rho_{i,j,k} + \rho_{i-1,j,k})/2]^{1-\gamma} - 1}, & M_{i,j,k} > 1 \end{cases} \quad (17)$$

$$\sigma_{i+1/2,j,k} = 1 - \nu_{i-1/2,j,k} = \begin{cases} 1, & M_{i,j,k} < 1 \\ \frac{(\gamma-1)M_{i,j,k}^2/2}{[(\rho_{i,j,k} + \rho_{i-1,j,k})/2]^{1-\gamma-1}}, & M_{i,j,k} > 1 \end{cases} \quad (18)$$

The contravariant velocity components are given by,

$$U = (X_x^2 + X_y^2)\Phi_X + X_y\Phi_Y \quad (19)$$

$$V = X_y\Phi_X + \Phi_Y \quad (20)$$

$$W = \Phi_Z \quad (21)$$

In order to improve the convergence of the analysis routine, the full potential is split into separate perturbation and freestream components as follows,

$$\Phi_{i,j,k} = \phi_{i,j,k} + Xq_\infty \cos(\alpha) + Zq_\infty \sin(\alpha) \quad (22)$$

Differentiating Eq.(22) with respect to X,Y,Z respectively,

$$(\Phi_X)_{i,j,k} = (\phi_X)_{i,j,k} + X_x q_\infty \cos(\alpha) \quad (23)$$

$$(\Phi_Y)_{i,j,k} = (\phi_Y)_{i,j,k} + X_y q_\infty \cos(\alpha) \quad (24)$$

$$(\Phi_Z)_{i,j,k} = (\phi_Z)_{i,j,k} + Z_z q_\infty \sin(\alpha) \quad (25)$$

where

$$(\phi_X)_{i,j,k} = D_X II(i)(\phi_{i+1,j,k} - \phi_{i,j,k}) \quad (26)$$

$$(\phi_Y)_{i,j,k} = [AJ1(j)(\phi_{i,j,k} - \phi_{i,j-1,k} + \phi_{i+1,j,k} - \phi_{i+1,j-1,k}) + AJ2(j)(\phi_{i,j+1,k} - \phi_{i,j,k} + \phi_{i+1,j+1,k} - \phi_{i+1,j,k})]/2 \quad (27)$$

$$(\phi_Z)_{i,j,k} = [A1K(k)(\phi_{i,j,k} - \phi_{i,j,k-1}) + A2K(k)(\phi_{i,j,k-1} - \phi_{i,j,k}) + A1K(k)(\phi_{i+1,j,k} - \phi_{i+1,j,k-1}) + A2K(k)(\phi_{i+1,j,k-1} - \phi_{i+1,j,k})]/2 \quad (28)$$

Note that a shearing transformation is used to transform the physical grid system (x,y,z) into a computational grid (X,Y,Z) aligned with the wing. This transformation is given by,

$$X(x,y) = \frac{x - xle(y)}{c(y)} \quad (29)$$

$$Y(y) = y \quad (30)$$

$$Z(z) = z \quad (31)$$

Before carrying out the analytical differentiation of the residual expression, it is necessary to find all potential dependencies. Furthermore, the full expression is divided into subexpressions in order to simplify and optimize subsequent expression evaluations. Appendix A includes a MACSYMA program that determines various potential dependencies for each residual subexpression. The result of running this program is also included in Appendix A. In addition, the above equations are written in functional form and given herein to assist in understanding the steps involved in finding the potential dependencies. These equations are given as follows,

$$R_{i,j,k} = R_{i,j,k}(RIP, RIM, RJP, RJ, RKP, RK, U, V, W, ANOFI) \quad (32)$$

where

$$RIP = RIP(\Phi_X, \Phi_Y, \Phi_Z, U, V, W) \quad (33)$$

$$RIM = RIM(\Phi_X, \Phi_Y, \Phi_Z, U, V, W) \quad (34)$$

$$RJP = RJP(\Phi_X, \Phi_Y, \Phi_Z, U, V, W) \quad (35)$$

$$RJ = RJ(\Phi_X, \Phi_Y, \Phi_Z, U, V, W) \quad (36)$$

$$RKP = RKP(\Phi_X, \Phi_Y, \Phi_Z, U, V, W) \quad (37)$$

$$RK = RK(\Phi_X, \Phi_Y, \Phi_Z, U, V, W) \quad (38)$$

$$ANOFI = ANOFI(R1K, DPU, R1KU, DPLO, R2KW, R2KP, CIR) \quad (39)$$

and,

$$U = U(\Phi_X, \Phi_Y) \quad (40)$$

$$V = V(\Phi_X, \Phi_Y) \quad (41)$$

$$W = W(\Phi_Z) \quad (42)$$

$$\Phi_X = \Phi_X[\phi_{ii,jj,kk}, M_\infty, \alpha] \quad (43)$$

$$\Phi_Y = \Phi_Y[\phi_{ii,jj,kk}, M_\infty, \alpha] \quad (44)$$

$$\Phi_Z = \Phi_Z[\phi_{ii,jj,kk}, M_\infty, \alpha] \quad (45)$$

As mentioned above, once the program in Appendix A is executed, potential dependencies are used in symbolically differentiating the general residual expression and residual boundary updates (wing, wake, and right hand side vectors). This is achieved using the MACSYMA program given in Appendix B. The result of running the analytic differentiation program is a segment of FORTRAN subroutines presented in Appendix C. This segment of FORTRAN code is then transferred from the VAX machine and linked into the analysis/sensitivity program on the IBM-3090.

It is to be noted that previous work^{1,2} included operations similar to those mentioned above. However, residual updates were prepared separately using Eq.(5) with the last term 'ANOFI' (the term that includes wing and wake boundary conditions) replaced by the appropriate boundary terms, then each residual expression was simplified and differentiated using a different MACSYMA program. As a result, multiple MACSYMA codes (about six separate codes) had to be prepared to yield the required FORTRAN source segments. This resulted in a total size of about 12,000 lines of source code. No major problems were encountered in compiling this number of code lines since they were developed in the form of multiple subroutines. Currently, the same FORTRAN segments were reduced in size to about 7,000 lines of FORTRAN source code. This was achieved by handling both the general residual expression and the 'ANOFI' term separately thus cancelling repeated (or equivalent) portions of the FORTRAN code. Consequently, it should be noted

that the codes given in the Appendices are still being modified and optimized for size and speed and that the enclosed versions of these codes (up to date versions) are still being debugged and refined.

For the current three-dimensional problem, design variables were previously ^{1,2} defined as follows,

- (a) Freestream design variables. These include the freestream Mach number and the angle of attack.
- (b) Cross-section design variables. These include variables that define the airfoil section (such as maximum thickness, maximum camber, and location of maximum camber) and variables that define the setting of each spanwise section (such as geometric twist and dihedral).
- (c) Planform design variables. These are variables that define the geometry of the wing planform.

These variables are used in preparing the right hand side vectors. In carrying out this step, the residual is analytically differentiated with respect to each design variable and a corresponding segment of FORTRAN code is generated. Refer to Appendices B and C for the details of these operations.

Finally, Appendix D includes a MACSYMA program to further process the results obtained from solving the sensitivity equation. The result of running this program is a segment of FORTRAN code used to calculate pressure coefficient sensitivity derivatives given the reduced potential sensitivity derivatives. A transfer/link operation similar to the above is applied in order to merge this FORTRAN segment into the analysis/sensitivity program.

Structure of the Analysis/Sensitivity FORTRAN Code

The analysis/sensitivity code is basically composed of the analysis program (ZEBRA), the finite-difference sensitivity driver, and the quasianalytical sensitivity driver. Furthermore, graphics routines are also included in the main code in order to assist in examining the results.

Execution of the main code starts thru an analysis (ZEBRA) run followed by sensitivity derivative calculations. These calculations are carried out either using the finite-difference method or using the quasianalytical approach. The finite-difference portion of the code is set up to allow two consecutive ZEBRA runs to be used to calculate a vector of sensitivity derivatives. This brute force technique while straight forward in application has the disadvantages of being expensive to implement and exhibits accuracy problems. As for the quasianalytical sensitivity driver, it consists of two main parts. The first part is a group of nested DO-LOOPS used to assemble the jacobian matrix and the right hand side vector(s). This is achieved using calls to the FORTRAN segments generated via MACSYMA (see Appendix C). After the numerical assembly step is completed, the second part of the sensitivity driver, a setup that allows execution of one of several linear sparse solvers, is used to solve the sensitivity equation and yields the vector(s) of sensitivity derivatives. Finally, the resulting sensitivity derivatives ($\partial\phi/\partial XD$) are further processed in order to obtain pressure coefficient sensitivity derivatives ($\partial C_p/\partial XD$). This step is carried out separately using a MACSYMA program that generates corresponding FORTRAN subroutines (see Appendix D).

Linear Solvers for the Sensitivity Equation

For the current three-dimensional problem and for the medium grid used, direct solvers that were previously used in the two-dimensional problem (those based on tridiagonal decomposition and full Gaussian elimination) failed to operate on the 3-D jacobian matrix basically due to memory limitations. On the other hand, iterative routines developed earlier for the two-dimensional problem worked properly however turned out to be somewhat slow. Later on, it was decided to try out some library routines that were available on the IBM-3090. These turned out to be extremely efficient with regards to memory requirements and speed of execution. Apparently, the reason for this efficiency lies in the ability of these routines to take advantage of the IBM-3090 architecture and vectorization facility besides being written in machine code and optimized for speed. In addition, the inclusion of these routines into the solver portion of the analysis/sensitivity program turned out to be straightforward in the form of regular FORTRAN calls. Two scientific library solvers (based on the iterative conjugate gradient method and the generalized minimum residual algorithm) were used with success and a GO REGION of about 90MB was allocated in the JCL with no major problems. Notice that the exact amount of storage needed for each of these solvers will depend on the structure of the jacobian matrix (roughly, the structure is sparse and banded), the details of which will be determined at a later stage.

Primary Results and Debugging Operations

Currently, the MACSYMA codes are being debugged and revised to increase both the efficiency and handling of the resulting FORTRAN code segments. For example, as mentioned earlier, the last term in Eq.(5) is handled separately without revising Eq.(5) in its entirety. This has the advantage of reducing the size of both the MACSYMA program and FORTRAN generated segments. In addition, extensive debugging and review of the entire work will be performed in parallel to the above steps.

The sensitivity of the pressure coefficient C_p with respect to the design variables is obtained using $\partial\phi/\partial XD$. The expression for the pressure coefficient is,

$$C_p = \frac{P - P_\infty}{\rho q_\infty^2 / 2} \quad (46)$$

Substituting for the pressure using the isentropic relation, therefore

$$C_p = \frac{(\gamma + 1)/\gamma}{\rho q_\infty^2} (\rho^\gamma - \rho_\infty^\gamma) \quad (47)$$

where

$$\rho = \left[1 - \frac{\gamma - 1}{\gamma + 1} (U\Phi_X + V\Phi_Y + W\Phi_Z) \right]^{\frac{1}{\gamma - 1}} \quad (48)$$

and $U, V, W, \Phi_X, \Phi_Y, \Phi_Z$ are given by equations (19)-(21) and (23)-(25) respectively. Notice also that the freestream values q_∞, ρ_∞ , and P_∞ are obtained using the relations,

$$q_\infty = \left[\frac{\gamma + 1}{\gamma - 1 + 2/M_\infty^2} \right]^{1/2} \quad (49)$$

$$\rho_\infty = \left[1 - \frac{\gamma - 1}{\gamma + 1} q_\infty^2 \right]^{1/(\gamma - 1)} \quad (50)$$

$$P_\infty = \frac{\gamma + 1}{2\gamma} \rho_\infty^\gamma \quad (51)$$

Refer to Appendix D for the symbolic calculation of pressure coefficient sensitivity derivatives using reduced potential sensitivity derivatives.

Some primary results obtained by executing the analysis/sensitivity code about a fixed design point are also presented in this report following Appendix D. The planform used is that of an ONERA-M6 wing with a six percent noncambered parabolic-arc section and the flowfield ($M_\infty = 0.8, \alpha = 0.0$) is computed on a $45 \times 30 \times 16$ medium grid (i.e. symmetric subcritical flowfield). Figures (1) and (2) show the pressure coefficient for this subcritical case. Figures (3) and (4) include finite-difference pressure coefficient sensitivity derivatives with respect to Mach number and angle of attack respectively. Finally, Figures (5) and (6) contain the corresponding derivatives obtained by the quasianalytical method. Notice that the trends are different for both sets of the derivatives. It is believed that while the finite-difference results follow the trends obtained in the two-dimensional sensitivity study, the quasianalytical derivatives have different trends and therefore are in error. As mentioned earlier, debugging operations are underway with the finite-difference method being used as a reference for correct quasianalytical trends.

Future Work

As mentioned in the first section, the second phase of this project will be towards overall debugging of the analysis/sensitivity code with the objective being to match the sensitivity derivatives obtained thru the quasianalytical method with those derivatives obtained thru the finite-difference approach. Initially, focus will be on sensitivities with respect to freestream design variables (Mach number and angle of attack) followed by sensitivities with respect to both airfoil and planform design variables. It is to be noted that the inclusion of the later variables might require some sort of semi-analytical treatment to handle right hand side calculations corresponding to these variables. Next, various case studies will be conducted in order

to compare and improve on both the accuracy and efficiency of the quasianalytical and finite difference methods. This step will be followed by a physical interpretation of the results. Finally, minor modifications in the form of supersonic boundary conditions will be added to the analysis/sensitivity program in order to allow execution of supersonic test cases.

Further Theoretical Aspects

In some optimization studies, higher sensitivity derivatives might be needed. In general, it is possible to extend the quasianalytical approach in order to obtain second order sensitivity derivatives. The following ideas³ could be applied directly to the sensitivity equation. Consider the linear system,

$$A X = B \quad (52)$$

The sensitivity of X with respect to the elements of A and B (XD_m) is obtained by differentiating Eq.(52) with respect to XD_m ,

$$\left[\frac{\partial A}{\partial XD_m} \right] X + A \left[\frac{\partial X}{\partial XD_m} \right] = \left[\frac{\partial B}{\partial XD_m} \right] \quad (53)$$

or,

$$A \left[\frac{\partial X}{\partial XD_m} \right] = \left[\frac{\partial B}{\partial XD_m} - \frac{\partial A}{\partial XD_m} X \right] \quad (54)$$

Applying the above procedure to Eq.(1), second order sensitivity derivatives for the current three-dimensional problem could be obtained. The result is,

$$\left[\frac{\partial R_{i,j,k}}{\partial \phi_{ii,jj,kk}} \right] \left(\frac{\partial^2 \phi_{ii,jj,kk}}{\partial XD_m \partial XD} \right) = - \left(\frac{\partial^2 R_{i,j,k}}{\partial XD_m \partial XD} + \frac{\partial^2 R_{i,j,k}}{\partial XD_m \partial \phi_{ii,jj,kk}} \frac{\partial \phi_{ii,jj,kk}}{\partial XD_m} \right) \quad (55)$$

The first term in Eq.(55) is the ($n \times n$) jacobian matrix and is obtained as explained earlier. The second term represents the unknown second order sensitivity vector ($n \times 1$). The third term is the ($n \times 1$) vector of derivative of the right hand side with respect to a second design variable. The fourth term is the derivative of the jacobian matrix with respect to a design variable, and is an ($n \times n$) matrix. Finally, the last term in Eq.(55) is the first order sensitivity vector, and would be obtained typically by solving Eq.(1). Notice that the extra work required to obtain second order derivatives would be to carry out additional MACSYMA operations (basically analytical differentiation) associated with the third and fourth terms of Eq.(55). Notice that Eq.(55) is similar to Eq.(1) except for the right hand sides which are modified. Similarly, the above procedure could be applied to obtain higher derivatives for the current three dimensional problem. Examples of second order sensitivity derivatives are $\partial^2 \phi / \partial \alpha^2$ and $\partial^2 \phi / \partial M_\infty \partial \alpha$.

References

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3. Deif, A., Sensitivity Analysis in Linear Systems, Springer Verlag, 1986.

APPENDIX A

MACSYMA CODE TO FIND THE RESIDUAL DEPENDENCIES

```

/*-----*/
/*          RMD.MAC: POTENTIAL DEPENDENCIES          */
/*-----*/
/****** MACSYMA PROGRAM TO GENERATE RESIDUAL DEPENDENCIES ******/
/*-----*/
SHOWTIME: TRUES

PX(I,J,K) := [P(I+1,J ,K ),P(I ,J ,K )]$

PY(I,J,K) := [P(I ,J ,K ),P(I ,J-1,K ),P(I+1,J ,K ),
               P(I+1,J-1,K ),P(I ,J+1,K ),P(I+1,J+1,K )]$

PZ[0](I,J,K):= [P(I ,J ,K ),P(I ,J ,K-1),P(I ,J ,K+1),
                P(I+1,J ,K ),P(I+1,J ,K-1),P(I+1,J ,K+1)]$

PHIU(J)      := [P(ITE,J,KUP),P(ITE,J,KUP+1),P(ITE,J,KUP+2)]$
PHIL(J)      := [P(ITE,J,KLO),P(ITE,J,KLO-1),P(ITE,J,KLO-2)]$
CIRC(J)      := UNION(PHIU(J),PHIL(J))$

PZ[1](I,J,K):= [P(I ,J ,K ),P(I ,J ,K+1),P(I ,J ,K+2),
                P(I+1,J ,K ),P(I+1,J ,K+1),P(I+1,J ,K+2)]$

PZ[2](I,J,K):= [P(I ,J ,K ),P(I ,J ,K-1),P(I ,J ,K-2),
                P(I+1,J ,K ),P(I+1,J ,K-1),P(I+1,J ,K-2)]$

PZ[3](I,J,K):= UNION([P(I ,J,K ),P(I ,J,K-1),P(I ,J,K+1),
                      P(I+1,J,K ),P(I+1,J,K-1),P(I+1,J,K+1)],CIRC(J))$

PZ[4](I,J,K):= UNION([P(I ,J,K ),P(I ,J,K-1),P(I ,J,K+1),
                      P(I+1,J,K ),P(I+1,J,K-1),P(I+1,J,K+1)],CIRC(J))$

FOR N:0 THRU 4 DO (
  RH [N](I,J,K) := UNION(PX(I,J,K),PY(I,J,K),PZ[N](I,J,K)),
  RIP[N](I,J,K) := UNION(RH[N](I,J,K),RH[N](I-1,J,K))
  RIM[N](I,J,K) := RIP[N](I-1,J,K) )$

RES(I,J,K) := [P(I ,J-1,K ),P(I ,J ,K ),P(I ,J+1,K ),
               P(I+1,J-1,K ),P(I+1,J ,K ),P(I+1,J+1,K ),
               P(I ,J ,K-1),P(I ,J ,K+1),P(I-1,J-1,K ),
               P(I-1,J ,K ),P(I-1,J+1,K ) ]$

R1K ( )      := UNION(RIP[1](I,J,K),RIM[1](I,J,K),RIP[1](I,J,K+1),RIM[1](I,J,K+1))$
R1KU( )      := UNION(RIP[2](I,J,K),RIM[2](I,J,K),RIP[2](I,J,K-1),RIM[2](I,J,K-1))$
R2KW( )      := UNION(RIP[3](I,J,K),RIM[3](I,J,K),RIP[3](I,J,K-1),RIM[3](I,J,K-1))$
R2KP( )      := UNION(RIP[4](I,J,K),RIM[4](I,J,K),RIP[4](I,J,K+1),RIM[4](I,J,K+1))$

FU (I,J):= [P(I,J,K),P(I,J,K+1),P(I,J,K+2)] $
FXU (I,J):= UNION(FU(I,J),FU(I-1,J),FU(I+1,J)) $
FYU (I,J):= UNION(FU(I,J),FU(I,J-1),FU(I,J+1)) $
DPU ( )   := UNION(FXU(I,J),FYU(I,J)) $

FL (I,J):= [P(I,J,K),P(I,J,K-1),P(I,J,K-2)] $
FXL (I,J):= UNION(FL(I,J),FL(I-1,J),FL(I+1,J)) $
FYL (I,J):= UNION(FL(I,J),FL(I,J-1),FL(I,J+1)) $
DPLO( )   := UNION(FXL(I,J),FYL(I,J)) $

ANOFI1( ) := UNION(R1K ,DPU )$
ANOFI2( ) := UNION(R1KU,DPLO)$
ANOFI3( ) := UNION(R2KW,CIRC)$
ANOFI4( ) := UNION(R2KP,CIRC)$

(RJ (I,J,K):=UNION(RIP[0](I,J,K),RIM[0](I,J,K),RIP[0](I,J-1,K),RIM[0](I,J-1,K)),
RJP(I,J,K):=RJ(I,J+1,K)
RK (I,J,K):=UNION(RIP[0](I,J,K),RIM[0](I,J,K),RIP[0](I,J,K-1),RIM[0](I,J,K-1)),
RKP(I,J,K):=RK(I,J,K+1)
RTOT(I,J,K):=UNION(RES,RIP,RIM,RJ,RJP,RK,RKP) )$

(RIP: RIP[0](I,J,K), RJ: RJ(I,J,K), RJP: RJP(I,J,K), RES: RES(I,J,K),
RIM: RIM[0](I,J,K), RK: RK(I,J,K), RKP: RKP(I,J,K), RTOT: RTOT(I,J,K))$

/*-----*/
(R1K : R1K ( ), DPU : DPU ( ) , ATT1: ANOFI1())$
(R1KU: R1KU( ), DPLO: DPLO( ) , ATT2: ANOFI2())$
(R2KW: R2KW( ), CIRC: CIRC(J), ATT3: ANOFI3())$
(R2KP: R2KP( ), CIRC: CIRC(J), ATT4: ANOFI4())$
/*-----*/

```


LT :

```
(P(I-2,J-2,K-3)=P1 ,P(I-2,J-2,K-1)=P51,P(I-2,J-2,K+1)=P101,P(I-2,J-2,K+3)=P151,
P(I-1,J-2,K-3)=P2 ,P(I-1,J-2,K-1)=P52,P(I-1,J-2,K+1)=P102,P(I-1,J-2,K+3)=P152,
P(I ,J-2,K-3)=P3 ,P(I ,J-2,K-1)=P53,P(I ,J-2,K+1)=P103,P(I ,J-2,K+3)=P153,
P(I+1,J-2,K-3)=P4 ,P(I+1,J-2,K-1)=P54,P(I+1,J-2,K+1)=P104,P(I+1,J-2,K+3)=P154,
P(I+2,J-2,K-3)=P5 ,P(I+2,J-2,K-1)=P55,P(I+2,J-2,K+1)=P105,P(I+2,J-2,K+3)=P155,
P(I-2,J-1,K-3)=P6 ,P(I-2,J-1,K-1)=P56,P(I-2,J-1,K+1)=P106,P(I-2,J-1,K+3)=P156,
P(I-1,J-1,K-3)=P7 ,P(I-1,J-1,K-1)=P57,P(I-1,J-1,K+1)=P107,P(I-1,J-1,K+3)=P157,
P(I ,J-1,K-3)=P8 ,P(I ,J-1,K-1)=P58,P(I ,J-1,K+1)=P108,P(I ,J-1,K+3)=P158,
P(I+1,J-1,K-3)=P9 ,P(I+1,J-1,K-1)=P59,P(I+1,J-1,K+1)=P109,P(I+1,J-1,K+3)=P159,
P(I+2,J-1,K-3)=P10,P(I+2,J-1,K-1)=P60,P(I+2,J-1,K+1)=P110,P(I+2,J-1,K+3)=P160,
P(I-2,J ,K-3)=P11,P(I-2,J ,K-1)=P61,P(I-2,J ,K+1)=P111,P(I-2,J ,K+3)=P161,
P(I-1,J ,K-3)=P12,P(I-1,J ,K-1)=P62,P(I-1,J ,K+1)=P112,P(I-1,J ,K+3)=P162,
P(I ,J ,K-3)=P13,P(I ,J ,K-1)=P63,P(I ,J ,K+1)=P113,P(I ,J ,K+3)=P163,
P(I+1,J ,K-3)=P14,P(I+1,J ,K-1)=P64,P(I+1,J ,K+1)=P114,P(I+1,J ,K+3)=P164,
P(I+2,J ,K-3)=P15,P(I+2,J ,K-1)=P65,P(I+2,J ,K+1)=P115,P(I+2,J ,K+3)=P165,
P(I-2,J+1,K-3)=P16,P(I-2,J+1,K-1)=P66,P(I-2,J+1,K+1)=P116,P(I-2,J+1,K+3)=P166,
P(I-1,J+1,K-3)=P17,P(I-1,J+1,K-1)=P67,P(I-1,J+1,K+1)=P117,P(I-1,J+1,K+3)=P167,
P(I ,J+1,K-3)=P18,P(I ,J+1,K-1)=P68,P(I ,J+1,K+1)=P118,P(I ,J+1,K+3)=P168,
P(I+1,J+1,K-3)=P19,P(I+1,J+1,K-1)=P69,P(I+1,J+1,K+1)=P119,P(I+1,J+1,K+3)=P169,
P(I+2,J+1,K-3)=P20,P(I+2,J+1,K-1)=P70,P(I+2,J+1,K+1)=P120,P(I+2,J+1,K+3)=P170,
P(I-2,J+2,K-3)=P21,P(I-2,J+2,K-1)=P71,P(I-2,J+2,K+1)=P121,P(I-2,J+2,K+3)=P171,
P(I-1,J+2,K-3)=P22,P(I-1,J+2,K-1)=P72,P(I-1,J+2,K+1)=P122,P(I-1,J+2,K+3)=P172,
P(I ,J+2,K-3)=P23,P(I ,J+2,K-1)=P73,P(I ,J+2,K+1)=P123,P(I ,J+2,K+3)=P173,
P(I+1,J+2,K-3)=P24,P(I+1,J+2,K-1)=P74,P(I+1,J+2,K+1)=P124,P(I+1,J+2,K+3)=P174,
P(I+2,J+2,K-3)=P25,P(I+2,J+2,K-1)=P75,P(I+2,J+2,K+1)=P125,P(I+2,J+2,K+3)=P175,
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```
P(I-2,J-2,K-2)=P26,P(I-2,J-2,K)=P76,P(I-2,J-2,K+2)=P126,P(ITE,J-1,KLO-2)=P176,
P(I-1,J-2,K-2)=P27,P(I-1,J-2,K)=P77,P(I-1,J-2,K+2)=P127,P(ITE,J-1,KLO-1)=P177,
P(I ,J-2,K-2)=P28,P(I ,J-2,K)=P78,P(I ,J-2,K+2)=P128,P(ITE,J-1,KLO )=P178,
P(I+1,J-2,K-2)=P29,P(I+1,J-2,K)=P79,P(I+1,J-2,K+2)=P129,P(ITE,J-1,KUP )=P179,
P(I+2,J-2,K-2)=P30,P(I+2,J-2,K)=P80,P(I+2,J-2,K+2)=P130,P(ITE,J-1,KUP+1)=P180,
P(I-2,J-1,K-2)=P31,P(I-2,J-1,K)=P81,P(I-2,J-1,K+2)=P131,P(ITE,J-1,KUP+2)=P181,
P(I-1,J-1,K-2)=P32,P(I-1,J-1,K)=P82,P(I-1,J-1,K+2)=P132,P(ITE,J ,KLO-2)=P182,
P(I ,J-1,K-2)=P33,P(I ,J-1,K)=P83,P(I ,J-1,K+2)=P133,P(ITE,J ,KLO-1)=P183,
P(I+1,J-1,K-2)=P34,P(I+1,J-1,K)=P84,P(I+1,J-1,K+2)=P134,P(ITE,J ,KLO )=P184,
P(I+2,J-1,K-2)=P35,P(I+2,J-1,K)=P85,P(I+2,J-1,K+2)=P135,P(ITE,J ,KUP )=P185,
P(I-2,J ,K-2)=P36,P(I-2,J ,K)=P86,P(I-2,J ,K+2)=P136,P(ITE,J ,KUP+1)=P186,
P(I-1,J ,K-2)=P37,P(I-1,J ,K)=P87,P(I-1,J ,K+2)=P137,P(ITE,J ,KUP+2)=P187,
P(I ,J ,K-2)=P38,P(I ,J ,K)=P88,P(I ,J ,K+2)=P138,P(ITE,J+1,KLO-2)=P188,
P(I+1,J ,K-2)=P39,P(I+1,J ,K)=P89,P(I+1,J ,K+2)=P139,P(ITE,J+1,KLO-1)=P189,
P(I+2,J ,K-2)=P40,P(I+2,J ,K)=P90,P(I+2,J ,K+2)=P140,P(ITE,J+1,KLO )=P190,
P(I-2,J+1,K-2)=P41,P(I-2,J+1,K)=P91,P(I-2,J+1,K+2)=P141,P(ITE,J+1,KUP )=P191,
P(I-1,J+1,K-2)=P42,P(I-1,J+1,K)=P92,P(I-1,J+1,K+2)=P142,P(ITE,J+1,KUP+1)=P192,
P(I ,J+1,K-2)=P43,P(I ,J+1,K)=P93,P(I ,J+1,K+2)=P143,P(ITE,J+1,KUP+2)=P193,
P(I+1,J+1,K-2)=P44,P(I+1,J+1,K)=P94,P(I+1,J+1,K+2)=P144,
P(I+2,J+1,K-2)=P45,P(I+2,J+1,K)=P95,P(I+2,J+1,K+2)=P145,
P(I-2,J+2,K-2)=P46,P(I-2,J+2,K)=P96,P(I-2,J+2,K+2)=P146,
P(I-1,J+2,K-2)=P47,P(I-1,J+2,K)=P97,P(I-1,J+2,K+2)=P147,
P(I ,J+2,K-2)=P48,P(I ,J+2,K)=P98,P(I ,J+2,K+2)=P148,
P(I+1,J+2,K-2)=P49,P(I+1,J+2,K)=P99,P(I+1,J+2,K+2)=P149,
P(I+2,J+2,K-2)=P50,P(I+2,J+2,K)=P100,P(I+1,J+2,K+2)=P150]$
```

```
(NI : [I ,I-1,I-2,I ,I-1,I-2,I ,I-1,I-2,I ,I-1,I-2],
NJ : [J ,J ,J ,J-1,J-1,J-1,J ,J ,J ,J+1,J+1,J+1,J ,J ,J ],
NK : [K ,K ,K ,K ,K ,K ,K-1,K-1,K-1,K ,K ,K ,K+1,K+1,K+1],
NTO : [1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ],
NT1 : [1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,1 ,1 ,1 ],
NT2 : [1 ,1 ,1 ,0 ,0 ,0 ,1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ],
NT3 : [1 ,1 ,1 ,0 ,0 ,0 ,1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ],
NT4 : [1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,1 ,1 ,1 ])$
```

```
(M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NTO[N]=1 THEN PPO[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NTO[N]=1 THEN PPO[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NTO[N]=1 THEN PPO[M]: PZ[0](NI[N],NJ[N],NK[N]))$
(M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NT1[N]=1 THEN PP1[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT1[N]=1 THEN PP1[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT1[N]=1 THEN PP1[M]: PZ[1](NI[N],NJ[N],NK[N]))$
(M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NT2[N]=1 THEN PP2[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT2[N]=1 THEN PP2[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT2[N]=1 THEN PP2[M]: PZ[2](NI[N],NJ[N],NK[N]))$
(M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NT3[N]=1 THEN PP3[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT3[N]=1 THEN PP3[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT3[N]=1 THEN PP3[M]: PZ[3](NI[N],NJ[N],NK[N]))$
(M : 0,
```

```

FOR N:1 THRU 15 DO (M:M+1,IF NT4[N]=1 THEN PP4[M]: PX (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT4[N]=1 THEN PP4[M]: PY (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT4[N]=1 THEN PP4[M]: PZ[4](NI[N],NU[N],NK[N]))$

/*-----*/
(RLO: [RES, RIP, RIM, RU, RK, RJP, RKP, RTOT] , RPO : SUBST(LT,RLO) )$
FOR N:1 THRU 8 DO ( RPO[N]:SORT( RPO[N] ), PRINT("DEP",N,RPO[N]) )$
M : OS
FOR N:1 THRU 15 DO
(M:M+1,IF NTO[N]=1 THEN (PPO[M]:SORT(SUBST(LT,PPO[M])),PRINT("LPO",M,PPO[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NTO[N]=1 THEN (PPO[M]:SORT(SUBST(LT,PPO[M])),PRINT("LPO",M,PPO[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NTO[N]=1 THEN (PPO[M]:SORT(SUBST(LT,PPO[M])),PRINT("LPO",M,PPO[M])))$

(RL1: [R1K , DPU , ATT1] , RP1 : SUBST(LT,RL1) )$
FOR N:1 THRU 3 DO ( RP1[N]:SORT( RP1[N] ), PRINT("DEP",N,RP1[N]) )$
M : OS
FOR N:1 THRU 15 DO
(M:M+1,IF NT1[N]=1 THEN (PP1[M]:SORT(SUBST(LT,PP1[M])),PRINT("LP1",M,PP1[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT1[N]=1 THEN (PP1[M]:SORT(SUBST(LT,PP1[M])),PRINT("LP1",M,PP1[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT1[N]=1 THEN (PP1[M]:SORT(SUBST(LT,PP1[M])),PRINT("LP1",M,PP1[M])))$

(RL2: [R1KU, DPLO, ATT2] , RP2 : SUBST(LT,RL2) )$
FOR N:1 THRU 3 DO ( RP2[N]:SORT( RP2[N] ), PRINT("DEP",N,RP2[N]) )$
M : OS
FOR N:1 THRU 15 DO
(M:M+1,IF NT2[N]=1 THEN (PP2[M]:SORT(SUBST(LT,PP2[M])),PRINT("LP2",M,PP2[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT2[N]=1 THEN (PP2[M]:SORT(SUBST(LT,PP2[M])),PRINT("LP2",M,PP2[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT2[N]=1 THEN (PP2[M]:SORT(SUBST(LT,PP2[M])),PRINT("LP2",M,PP2[M])))$

(RL3: [R2KW, CIRC, ATT3] , RP3 : SUBST(LT,RL3) )$
FOR N:1 THRU 3 DO ( RP3[N]:SORT( RP3[N] ), PRINT("DEP",N,RP3[N]) )$
M : OS
FOR N:1 THRU 15 DO
(M:M+1,IF NT3[N]=1 THEN (PP3[M]:SORT(SUBST(LT,PP3[M])),PRINT("LP3",M,PP3[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT3[N]=1 THEN (PP3[M]:SORT(SUBST(LT,PP3[M])),PRINT("LP3",M,PP3[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT3[N]=1 THEN (PP3[M]:SORT(SUBST(LT,PP3[M])),PRINT("LP3",M,PP3[M])))$

(RL4: [R2KP, CIRC, ATT4] , RP4 : SUBST(LT,RL4) )$
FOR N:1 THRU 3 DO ( RP4[N]:SORT( RP4[N] ), PRINT("DEP",N,RP4[N]) )$
M : OS
FOR N:1 THRU 15 DO
(M:M+1,IF NT4[N]=1 THEN (PP4[M]:SORT(SUBST(LT,PP4[M])),PRINT("LP4",M,PP4[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT4[N]=1 THEN (PP4[M]:SORT(SUBST(LT,PP4[M])),PRINT("LP4",M,PP4[M])))$
FOR N:1 THRU 15 DO
(M:M+1,IF NT4[N]=1 THEN (PP4[M]:SORT(SUBST(LT,PP4[M])),PRINT("LP4",M,PP4[M])))$
/*-----*/

```

Executed on a VAX 8650 provided by

Academic Computing Services

Texas A & M University

Current date and time is 23-JAN-1991 08:52:31.18

\$! This is a login command procedure template

\$ IF F\$MODE () .EQS. "BATCH" THEN EXIT

\$MAC

If you logged on to Venus by typing VENUS at the
ENTER RESOURCE NAME prompt of the port selector,
do NOT use the BREAK key to get out of Macsyma.

This is Macsyma 412.61 for DEC VAX 8650 Series Computers.

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Enhancements (c) 1982, 1988 Symbolics, Inc. All Rights Reserved.

Type "DESCRIBE(TRADE_SECRET);" to see important legal notices.

Type "HELP();" for more information.

Checking password file: DISK\$PKG1:[MACSYMA_412.SYSTEM]PASSWD-VENUS-412.TEXT

DISK\$PKG1:[MACSYMA_412.SYSTEM]macsyma-init.fas;4 being loaded.

Init File Not Found: SYS\$USERDISK:[HME4905]macsyma-init.mac

BATCH("RMD.MAC");

(C1)

```
(C2) /*-----*/
/*                RMD.MAC: POTENTIAL DEPENDENCIES                */
/*-----*/
/****** MACSYMA PROGRAM TO GENERATE RESIDUAL DEPENDENCIES *****/
/*-----*/
SHOWTIME: TRUE$
Time= 0 msec
```

(C3) PX(I,J,K) := [P(I+1,J ,K),P(I ,J ,K)]\$
Time= 20 msec

(C4) PY(I,J,K) := [P(I ,J ,K),P(I ,J-1,K),P(I+1,J ,K),
P(I+1,J-1,K),P(I ,J+1,K),P(I+1,J+1,K)]\$
Time= 10 msec

(C5) PZ[0](I,J,K):= [P(I ,J ,K),P(I ,J ,K-1),P(I ,J ,K+1),
P(I+1,J ,K),P(I+1,J ,K-1),P(I+1,J ,K+1)]\$
Time= 10 msec

(C6) PHIU(J) := [P(ITE,J,KUP),P(ITE,J,KUP+1),P(ITE,J,KUP+2)]\$
Time= 0 msec

(C7) PHIL(J) := [P(ITE,J,KLO),P(ITE,J,KLO-1),P(ITE,J,KLO-2)]\$
Time= 0 msec

(C8) CIRC(J) := UNION(PHIU(J),PHIL(J))\$
Time= 0 msec

(C9) PZ[1](I,J,K):= [P(I ,J ,K),P(I ,J ,K+1),P(I ,J ,K+2),
P(I+1,J ,K),P(I+1,J ,K+1),P(I+1,J ,K+2)]\$
Time= 0 msec

(C10) PZ[2](I,J,K):= [P(I ,J ,K),P(I ,J ,K-1),P(I ,J ,K-2),
P(I+1,J ,K),P(I+1,J ,K-1),P(I+1,J ,K-2)]\$
Time= 10 msec

```

(C11) PZ[3](I,J,K):= UNION([P(I ,J,K ),P(I ,J,K-1),P(I ,J,K+1),
                          P(I+1,J,K ),P(I+1,J,K-1),P(I+1,J,K+1)],CIRC(J))$
Time= 0 msec

(C12) PZ[4](I,J,K):= UNION([P(I ,J,K ),P(I ,J,K-1),P(I ,J,K+1),
                          P(I+1,J,K ),P(I+1,J,K-1),P(I+1,J,K+1)],CIRC(J))$
Time= 10 msec

(C13) FOR N:0 THRU 4 DO (
RH [N](I,J,K ):= UNION(PX(I,J,K),PY(I,J,K),PZ[N](I,J,K)),
RIP[N](I,J,K ):= UNION(RH[N](I,J,K),RH[N](I-1,J,K))
RIM[N](I,J,K ):= RIP[N](I-1,J,K)
Time= 80 msec

(C14) RES(I,J,K) := [P(I ,J-1,K ),P(I ,J ,K ),P(I ,J+1,K ),
                    P(I+1,J-1,K ),P(I+1,J ,K ),P(I+1,J+1,K ),
                    P(I ,J ,K-1),P(I ,J ,K+1),P(I-1,J-1,K ),
                    P(I-1,J ,K ),P(I-1,J+1,K )
                    ]$
Time= 0 msec

(C15) R1K ( ) := UNION(RIP[1](I,J,K),RIM[1](I,J,K),RIP[1](I,J,K+1),RIM[1](I,J,K+1))$
Time= 10 msec

(C16) R1KU( ) := UNION(RIP[2](I,J,K),RIM[2](I,J,K),RIP[2](I,J,K-1),RIM[2](I,J,K-1))$
Time= 0 msec

(C17) R2KW( ) := UNION(RIP[3](I,J,K),RIM[3](I,J,K),RIP[3](I,J,K-1),RIM[3](I,J,K-1))$
Time= 0 msec

(C18) R2KP( ) := UNION(RIP[4](I,J,K),RIM[4](I,J,K),RIP[4](I,J,K+1),RIM[4](I,J,K+1))$
Time= 10 msec

(C19) FU (I,J):= [P(I,J,K),P(I,J,K+1),P(I,J,K+2)] $
Time= 0 msec

(C20) FXU (I,J):= UNION(FU(I,J),FU(I-1,J),FU(I+1,J)) $
Time= 0 msec

(C21) FYU (I,J):= UNION(FU(I,J),FU(I,J-1),FU(I,J+1)) $
Time= 0 msec

(C22) DPU ( ) := UNION(FXU(I,J),FYU(I,J)) $
Time= 10 msec

(C23) FL (I,J):= [P(I,J,K),P(I,J,K-1),P(I,J,K-2)] $
Time= 0 msec

(C24) FXL (I,J):= UNION(FL(I,J),FL(I-1,J),FL(I+1,J)) $
Time= 0 msec

(C25) FYL (I,J):= UNION(FL(I,J),FL(I,J-1),FL(I,J+1)) $
Time= 10 msec

(C26) DPLO( ) := UNION(FXL(I,J),FYL(I,J)) $
Time= 10 msec

```

(C27) ANOFI1() := UNION(R1K ,DPU)\$
Time= 10 msecs

(C28) ANOFI2() := UNION(R1KU,DPL0)\$
Time= 0 msecs

(C29) ANOFI3() := UNION(R2KW,CIRC)\$
Time= 0 msecs

(C30) ANOFI4() := UNION(R2KP,CIRC)\$
Time= 10 msecs

(C31) (RJ (I,J,K):=UNION(RIP[O](I,J,K),RIM[O](I,J,K),RIP[O](I,J-1,K),RIM[O](I,J-1,K)),
RJP(I,J,K):=RJ(I,J+1,K)
RK (I,J,K):=UNION(RIP[O](I,J,K),RIM[O](I,J,K),RIP[O](I,J,K-1),RIM[O](I,J,K-1)),
RKP(I,J,K):=RK(I,J,K+1)
RTOT(I,J,K):=UNION(RES,RIP,RIM,RJ,RJP,RK,RKP))\$
Time= 20 msecs

(C32) (RIP: RIP[O](I,J,K), RJ: RJ(I,J,K), RJP: RJP(I,J,K), RES : RES(I,J,K),
RIM: RIM[O](I,J,K), RK: RK(I,J,K), RKP: RKP(I,J,K), RTOT: RTOT(I,J,K))\$
; Starting garbage collection due to dynamic-0 space overflow.
; Finished garbage collection due to dynamic-0 space overflow.
; Starting garbage collection due to dynamic-1 space overflow.
; Finished garbage collection due to dynamic-1 space overflow.
Time= 139300 msecs

(C33) /*-----*/

(R1K : R1K (), DPU : DPU () , ATT1: ANOFI1())\$
; Starting garbage collection due to dynamic-0 space overflow.
; Finished garbage collection due to dynamic-0 space overflow.
Time= 32320 msecs

(C34) (R1KU: R1KU(), DPL0: DPL0() , ATT2: ANOFI2())\$
Time= 29230 msecs

(C35) (R2KW: R2KW(), CIRC: CIRC(J), ATT3: ANOFI3())\$
; Starting garbage collection due to dynamic-1 space overflow.
; Finished garbage collection due to dynamic-1 space overflow.
Time= 41350 msecs

(C36) (R2KP: R2KP(), CIRC: CIRC(J), ATT4: ANOFI4())\$
; Starting garbage collection due to dynamic-0 space overflow.
; Finished garbage collection due to dynamic-0 space overflow.
Time= 40840 msecs

(C37) /*-----*/

LT :
[P(I-2,J-2,K-3)=P1 ,P(I-2,J-2,K-1)=P51,P(I-2,J-2,K+1)=P101,P(I-2,J-2,K+3)=P151,
P(I-1,J-2,K-3)=P2 ,P(I-1,J-2,K-1)=P52,P(I-1,J-2,K+1)=P102,P(I-1,J-2,K+3)=P152,
P(I ,J-2,K-3)=P3 ,P(I ,J-2,K-1)=P53,P(I ,J-2,K+1)=P103,P(I ,J-2,K+3)=P153,
P(I+1,J-2,K-3)=P4 ,P(I+1,J-2,K-1)=P54,P(I+1,J-2,K+1)=P104,P(I+1,J-2,K+3)=P154,
P(I+2,J-2,K-3)=P5 ,P(I+2,J-2,K-1)=P55,P(I+2,J-2,K+1)=P105,P(I+2,J-2,K+3)=P155,
P(I-2,J-1,K-3)=P6 ,P(I-2,J-1,K-1)=P56,P(I-2,J-1,K+1)=P106,P(I-2,J-1,K+3)=P156,
P(I-1,J-1,K-3)=P7 ,P(I-1,J-1,K-1)=P57,P(I-1,J-1,K+1)=P107,P(I-1,J-1,K+3)=P157,
P(I ,J-1,K-3)=P8 ,P(I ,J-1,K-1)=P58,P(I ,J-1,K+1)=P108,P(I ,J-1,K+3)=P158,
P(I+1,J-1,K-3)=P9 ,P(I+1,J-1,K-1)=P59,P(I+1,J-1,K+1)=P109,P(I+1,J-1,K+3)=P159,
P(I+2,J-1,K-3)=P10,P(I+2,J-1,K-1)=P60,P(I+2,J-1,K+1)=P110,P(I+2,J-1,K+3)=P160,
P(I-2,J ,K-3)=P11,P(I-2,J ,K-1)=P61,P(I-2,J ,K+1)=P111,P(I-2,J ,K+3)=P161,
P(I-1,J ,K-3)=P12,P(I-1,J ,K-1)=P62,P(I-1,J ,K+1)=P112,P(I-1,J ,K+3)=P162,
P(I ,J ,K-3)=P13,P(I ,J ,K-1)=P63,P(I ,J ,K+1)=P113,P(I ,J ,K+3)=P163,
P(I+1,J ,K-3)=P14,P(I+1,J ,K-1)=P64,P(I+1,J ,K+1)=P114,P(I+1,J ,K+3)=P164,

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P(I+2,J,K-3)=P15,P(I+2,J,K-1)=P65,P(I+2,J,K+1)=P115,P(I+2,J,K+3)=P165,
P(I-2,J+1,K-3)=P16,P(I-2,J+1,K-1)=P66,P(I-2,J+1,K+1)=P116,P(I-2,J+1,K+3)=P166,
P(I-1,J+1,K-3)=P17,P(I-1,J+1,K-1)=P67,P(I-1,J+1,K+1)=P117,P(I-1,J+1,K+3)=P167,
P(I,J+1,K-3)=P18,P(I,J+1,K-1)=P68,P(I,J+1,K+1)=P118,P(I,J+1,K+3)=P168,
P(I+1,J+1,K-3)=P19,P(I+1,J+1,K-1)=P69,P(I+1,J+1,K+1)=P119,P(I+1,J+1,K+3)=P169,
P(I+2,J+1,K-3)=P20,P(I+2,J+1,K-1)=P70,P(I+2,J+1,K+1)=P120,P(I+2,J+1,K+3)=P170,
P(I-2,J+2,K-3)=P21,P(I-2,J+2,K-1)=P71,P(I-2,J+2,K+1)=P121,P(I-2,J+2,K+3)=P171,
P(I-1,J+2,K-3)=P22,P(I-1,J+2,K-1)=P72,P(I-1,J+2,K+1)=P122,P(I-1,J+2,K+3)=P172,
P(I,J+2,K-3)=P23,P(I,J+2,K-1)=P73,P(I,J+2,K+1)=P123,P(I,J+2,K+3)=P173,
P(I+1,J+2,K-3)=P24,P(I+1,J+2,K-1)=P74,P(I+1,J+2,K+1)=P124,P(I+1,J+2,K+3)=P174,
P(I+2,J+2,K-3)=P25,P(I+2,J+2,K-1)=P75,P(I+2,J+2,K+1)=P125,P(I+2,J+2,K+3)=P175,

```

```

P(I-2,J-2,K-2)=P26,P(I-2,J-2,K)=P76,P(I-2,J-2,K+2)=P126,P(ITE,J-1,KLO-2)=P176,
P(I-1,J-2,K-2)=P27,P(I-1,J-2,K)=P77,P(I-1,J-2,K+2)=P127,P(ITE,J-1,KLO-1)=P177,
P(I,J-2,K-2)=P28,P(I,J-2,K)=P78,P(I,J-2,K+2)=P128,P(ITE,J-1,KLO)=P178,
P(I+1,J-2,K-2)=P29,P(I+1,J-2,K)=P79,P(I+1,J-2,K+2)=P129,P(ITE,J-1,KUP)=P179,
P(I+2,J-2,K-2)=P30,P(I+2,J-2,K)=P80,P(I+2,J-2,K+2)=P130,P(ITE,J-1,KUP+1)=P180,
P(I-2,J-1,K-2)=P31,P(I-2,J-1,K)=P81,P(I-2,J-1,K+2)=P131,P(ITE,J-1,KUP+2)=P181,
P(I-1,J-1,K-2)=P32,P(I-1,J-1,K)=P82,P(I-1,J-1,K+2)=P132,P(ITE,J,KLO-2)=P182,
P(I,J-1,K-2)=P33,P(I,J-1,K)=P83,P(I,J-1,K+2)=P133,P(ITE,J,KLO-1)=P183,
P(I+1,J-1,K-2)=P34,P(I+1,J-1,K)=P84,P(I+1,J-1,K+2)=P134,P(ITE,J,KLO)=P184,
P(I+2,J-1,K-2)=P35,P(I+2,J-1,K)=P85,P(I+2,J-1,K+2)=P135,P(ITE,J,KUP)=P185,
P(I-2,J,K-2)=P36,P(I-2,J,K)=P86,P(I-2,J,K+2)=P136,P(ITE,J,KUP+1)=P186,
P(I-1,J,K-2)=P37,P(I-1,J,K)=P87,P(I-1,J,K+2)=P137,P(ITE,J,KUP+2)=P187,
P(I,J,K-2)=P38,P(I,J,K)=P88,P(I,J,K+2)=P138,P(ITE,J+1,KLO-2)=P188,
P(I+1,J,K-2)=P39,P(I+1,J,K)=P89,P(I+1,J,K+2)=P139,P(ITE,J+1,KLO-1)=P189,
P(I+2,J,K-2)=P40,P(I+2,J,K)=P90,P(I+2,J,K+2)=P140,P(ITE,J+1,KLO)=P190,
P(I-2,J+1,K-2)=P41,P(I-2,J+1,K)=P91,P(I-2,J+1,K+2)=P141,P(ITE,J+1,KUP)=P191,
P(I-1,J+1,K-2)=P42,P(I-1,J+1,K)=P92,P(I-1,J+1,K+2)=P142,P(ITE,J+1,KUP+1)=P192,
P(I,J+1,K-2)=P43,P(I,J+1,K)=P93,P(I,J+1,K+2)=P143,P(ITE,J+1,KUP+2)=P193,
P(I+1,J+1,K-2)=P44,P(I+1,J+1,K)=P94,P(I+1,J+1,K+2)=P144,
P(I+2,J+1,K-2)=P45,P(I+2,J+1,K)=P95,P(I+2,J+1,K+2)=P145,
P(I-2,J+2,K-2)=P46,P(I-2,J+2,K)=P96,P(I-2,J+2,K+2)=P146,
P(I-1,J+2,K-2)=P47,P(I-1,J+2,K)=P97,P(I-1,J+2,K+2)=P147,
P(I,J+2,K-2)=P48,P(I,J+2,K)=P98,P(I,J+2,K+2)=P148,
P(I+1,J+2,K-2)=P49,P(I+1,J+2,K)=P99,P(I+1,J+2,K+2)=P149,
P(I+2,J+2,K-2)=P50,P(I+2,J+2,K)=P100,P(I+1,J+2,K+2)=P150]$
Time= 880 msecs

```

```

(C38) (NI : [I,I-1,I-2,I,I-1,I-2,I,I-1,I-2,I,I-1,I-2],
NJ : [J,J,J,J-1,J-1,J-1,J,J,J,J+1,J+1,J+1,J,J,J],
NK : [K,K,K,K,K,K,K,K-1,K-1,K-1,K,K,K,K+1,K+1,K+1],
NTO : [1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1],
NT1 : [1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0],
NT2 : [1,1,1,0,0,0,0,1,1,1,0,0,0,0,0,0],
NT3 : [1,1,1,0,0,0,0,1,1,1,0,0,0,0,0,0],
NT4 : [1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0])$
Time= 70 msecs

```

```

(C39) (M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NTO[N]=1 THEN PPO[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NTO[N]=1 THEN PPO[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NTO[N]=1 THEN PPO[M]: PZ[0](NI[N],NJ[N],NK[N]))$
Time= 1550 msecs

```

```

(C40) (M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NT1[N]=1 THEN PP1[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT1[N]=1 THEN PP1[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT1[N]=1 THEN PP1[M]: PZ[1](NI[N],NJ[N],NK[N]))$
Time= 890 msecs

```

```

(C41) (M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NT2[N]=1 THEN PP2[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT2[N]=1 THEN PP2[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT2[N]=1 THEN PP2[M]: PZ[2](NI[N],NJ[N],NK[N]))$
Time= 920 msecs

```

```

(C42) (M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF NT3[N]=1 THEN PP3[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT3[N]=1 THEN PP3[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT3[N]=1 THEN PP3[M]: PZ[3](NI[N],NJ[N],NK[N]))$
Time= 6310 msecs

```

```

(C43) (M : O,
FOR N:1 THRU 15 DO (M:M+1,IF NT4[N]=1 THEN PP4[M]: PX (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT4[N]=1 THEN PP4[M]: PY (NI[N],NJ[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF NT4[N]=1 THEN PP4[M]: PZ[4](NI[N],NJ[N],NK[N]))$
Time= 6410 msec

```

```

(C44) /*-----*/
(RLO: [RES, RIP, RIM, RJ, RK, RJP, RKP, RTOT] , RPO : SUBST(LT,RLO) )$
Time= 14730 msec

```

```

(C45) FOR N:1 THRU 8 DO ( RPO[N]:SORT( RPO[N] ), PRINT("DEP",N,RPO[N]) )$
DEP 1 [P113, P63, P82, P83, P84, P87, P88, P89, P92, P93, P94]
DEP 2 [P112, P113, P114, P62, P63, P64, P82, P83, P84, P87, P88, P89, P92, P93,
P94]
DEP 3 [P111, P112, P113, P61, P62, P63, P81, P82, P83, P86, P87, P88, P91, P92,
P93]
DEP 4 [P106, P107, P108, P109, P111, P112, P113, P114, P56, P57, P58, P59, P61,
P62, P63, P64, P76, P77, P78, P79, P81, P82, P83, P84, P86, P87, P88, P89, P91,
P92, P93, P94]
DEP 5 [P111, P112, P113, P114, P36, P37, P38, P39, P56, P57, P58, P59, P61,
P62, P63, P64, P66, P67, P68, P69, P81, P82, P83, P84, P86, P87, P88, P89, P91,
P92, P93, P94]
DEP 6 [P111, P112, P113, P114, P116, P117, P118, P119, P61, P62, P63, P64, P66,
P67, P68, P69, P81, P82, P83, P84, P86, P87, P88, P89, P91, P92, P93, P94, P96,
P97, P98, P99]
DEP 7 [P106, P107, P108, P109, P111, P112, P113, P114, P116, P117, P118, P119,
P136, P137, P138, P139, P61, P62, P63, P64, P81, P82, P83, P84, P86, P87, P88,
P89, P91, P92, P93, P94]
DEP 8 [P106, P107, P108, P109, P111, P112, P113, P114, P116, P117, P118, P119,
P136, P137, P138, P139, P36, P37, P38, P39, P56, P57, P58, P59, P61, P62, P63,
P64, P66, P67, P68, P69, P76, P77, P78, P79, P81, P82, P83, P84, P86, P87, P88,
P89, P91, P92, P93, P94, P96, P97, P98, P99]
Time= 1320 msec

```

```

(C46) M : O$
Time= 10 msec

```

```

(C47) FOR N:1 THRU 15 DO
(M:M+1,IF NTO[N]=1 THEN (PPO[M]:SORT(SUBST(LT,PPO[M])),PRINT("LPO",M,PPO[M])))$
LPO 1 [P88, P89]
LPO 2 [P87, P88]
LPO 3 [P86, P87]
LPO 4 [P83, P84]
LPO 5 [P82, P83]
; Starting garbage collection due to dynamic-1 space overflow.
; Finished garbage collection due to dynamic-1 space overflow.
LPO 6 [P81, P82]

```

LPO 7 [P63, P64]
LPO 8 [P62, P63]
LPO 9 [P61, P62]
LPO 10 [P93, P94]
LPO 11 [P92, P93]
LPO 12 [P91, P92]
LPO 13 [P113, P114]
LPO 14 [P112, P113]
LPO 15 [P111, P112]
Time= 7890 msec

(C48) FOR N:1 THRU 15 DO
(M:M+1,IF NTO[N]=1 THEN (PPO[M]:SORT(SUBST(LT,PPO[M])),PRINT("LPO",M,PPO[M]))))\$

LPO 16 [P83, P84, P88, P89, P93, P94]
LPO 17 [P82, P83, P87, P88, P92, P93]
LPO 18 [P81, P82, P86, P87, P91, P92]
LPO 19 [P78, P79, P83, P84, P88, P89]
LPO 20 [P77, P78, P82, P83, P87, P88]
LPO 21 [P76, P77, P81, P82, P86, P87]
LPO 22 [P58, P59, P63, P64, P68, P69]
LPO 23 [P57, P58, P62, P63, P67, P68]
LPO 24 [P56, P57, P61, P62, P66, P67]
LPO 25 [P88, P89, P93, P94, P98, P99]
LPO 26 [P87, P88, P92, P93, P97, P98]
LPO 27 [P86, P87, P91, P92, P96, P97]
LPO 28 [P108, P109, P113, P114, P118, P119]
LPO 29 [P107, P108, P112, P113, P117, P118]
LPO 30 [P106, P107, P111, P112, P116, P117]
Time= 7730 msec

(C49) FOR N:1 THRU 15 DO
(M:M+1,IF NTO[N]=1 THEN (PPO[M]:SORT(SUBST(LT,PPO[M])),PRINT("LPO",M,PPO[M]))))\$

LPO 31 [P113, P114, P63, P64, P88, P89]
LPO 32 [P112, P113, P62, P63, P87, P88]
LPO 33 [P111, P112, P61, P62, P86, P87]
LPO 34 [P108, P109, P58, P59, P83, P84]
LPO 35 [P107, P108, P57, P58, P82, P83]
LPO 36 [P106, P107, P56, P57, P81, P82]
LPO 37 [P38, P39, P63, P64, P88, P89]
LPO 38 [P37, P38, P62, P63, P87, P88]
LPO 39 [P36, P37, P61, P62, P86, P87]
LPO 40 [P118, P119, P68, P69, P93, P94]
LPO 41 [P117, P118, P67, P68, P92, P93]

LPO 42 [P116, P117, P66, P67, P91, P92]
 LPO 43 [P113, P114, P138, P139, P88, P89]
 LPO 44 [P112, P113, P137, P138, P87, P88]
 LPO 45 [P111, P112, P136, P137, P86, P87]
 Time= 7070 msec

(C50) (RL1: [R1K , DPU , ATT1] , RP1 : SUBST(LT,RL1))\$
 Time= 5620 msec

(C51) FOR N:1 THRU 3 DO (RP1[N]:SORT(RP1[N]), PRINT("DEP",N,RP1[N]))\$
 DEP 1 [P106, P107, P108, P109, P111, P112, P113, P114, P116, P117, P118, P119,
 P136, P137, P138, P139, P161, P162, P163, P164, P81, P82, P83, P84, P86, P87,
 P88, P89, P91, P92, P93, P94]
 DEP 2 [P108, P112, P113, P114, P118, P133, P137, P138, P139, P143, P83, P87,
 P88, P89, P93]
 DEP 3 [P106, P107, P108, P109, P111, P112, P113, P114, P116, P117, P118, P119,
 P133, P136, P137, P138, P139, P143, P161, P162, P163, P164, P81, P82, P83, P84,
 P86, P87, P88, P89, P91, P92, P93, P94]
 Time= 510 msec

(C52) M : 0\$
 Time= 0 msec

(C53) FOR N:1 THRU 15 DO
 (M:M+1,IF NT1[N]=1 THEN (PP1[M]:SORT(SUBST(LT,PP1[M])),PRINT("LP1",M,PP1[M])))\$
 LP1 1 [P88, P89]
 LP1 2 [P87, P88]
 LP1 3 [P86, P87]
 LP1 13 [P113, P114]
 LP1 14 [P112, P113]
 LP1 15 [P111, P112]
 Time= 1410 msec

(C54) FOR N:1 THRU 15 DO
 (M:M+1,IF NT1[N]=1 THEN (PP1[M]:SORT(SUBST(LT,PP1[M])),PRINT("LP1",M,PP1[M])))\$
 LP1 16 [P83, P84, P88, P89, P93, P94]
 LP1 17 [P82, P83, P87, P88, P92, P93]
 LP1 18 [P81, P82, P86, P87, P91, P92]
 LP1 28 [P108, P109, P113, P114, P118, P119]
 LP1 29 [P107, P108, P112, P113, P117, P118]
 LP1 30 [P106, P107, P111, P112, P116, P117]
 Time= 2860 msec

(C55) FOR N:1 THRU 15 DO
 (M:M+1,IF NT1[N]=1 THEN (PP1[M]:SORT(SUBST(LT,PP1[M])),PRINT("LP1",M,PP1[M])))\$
 LP1 31 [P113, P114, P138, P139, P88, P89]
 LP1 32 [P112, P113, P137, P138, P87, P88]

LP1 33 [P111, P112, P136, P137, P86, P87]
LP1 43 [P113, P114, P138, P139, P163, P164]
LP1 44 [P112, P113, P137, P138, P162, P163]
LP1 45 [P111, P112, P136, P137, P161, P162]
Time= 2990 msec

(C56) (RL2: [R1KU, DPLO, ATT2] , RP2 : SUBST(LT,RL2))\$
Time= 5460 msec

(C57) FOR N:1 THRU 3 DO (RP2[N]:SORT(RP2[N]), PRINT("DEP",N,RP2[N]))\$
DEP 1 [P11, P12, P13, P14, P36, P37, P38, P39, P56, P57, P58, P59, P61, P62,
P63, P64, P66, P67, P68, P69, P81, P82, P83, P84, P86, P87, P88, P89, P91, P92,
P93, P94]
DEP 2 [P33, P37, P38, P39, P43, P58, P62, P63, P64, P68, P83, P87, P88, P89,
P93]
DEP 3 [P11, P12, P13, P14, P33, P36, P37, P38, P39, P43, P56, P57, P58, P59,
P61, P62, P63, P64, P66, P67, P68, P69, P81, P82, P83, P84, P86, P87, P88, P89,
P91, P92, P93, P94]
Time= 500 msec

(C58) M : O\$
Time= 0 msec

(C59) FOR N:1 THRU 15 DO
(M:M+1,IF NT2[N]=1 THEN (PP2[M]:SORT(SUBST(LT,PP2[M])),PRINT("LP2",M,PP2[M]))))\$
LP2 1 [P88, P89]
LP2 2 [P87, P88]
LP2 3 [P86, P87]
LP2 7 [P63, P64]
LP2 8 [P62, P63]
LP2 9 [P61, P62]
Time= 1320 msec

(C60) FOR N:1 THRU 15 DO
(M:M+1,IF NT2[N]=1 THEN (PP2[M]:SORT(SUBST(LT,PP2[M])),PRINT("LP2",M,PP2[M]))))\$
LP2 16 [P83, P84, P88, P89, P93, P94]
LP2 17 [P82, P83, P87, P88, P92, P93]
LP2 18 [P81, P82, P86, P87, P91, P92]
LP2 22 [P58, P59, P63, P64, P68, P69]
LP2 23 [P57, P58, P62, P63, P67, P68]
LP2 24 [P56, P57, P61, P62, P66, P67]
Time= 3150 msec

(C61) FOR N:1 THRU 15 DO
(M:M+1,IF NT2[N]=1 THEN (PP2[M]:SORT(SUBST(LT,PP2[M])),PRINT("LP2",M,PP2[M]))))\$
LP2 31 [P38, P39, P63, P64, P88, P89]
LP2 32 [P37, P38, P62, P63, P87, P88]

LP2 33 [P36, P37, P61, P62, P86, P87]

LP2 37 [P13, P14, P38, P39, P63, P64]

LP2 38 [P12, P13, P37, P38, P62, P63]

LP2 39 [P11, P12, P36, P37, P61, P62]

Time= 2950 msec

(C62) (RL3: [R2KW, CIRC, ATT3] , RP3 : SUBST(LT,RL3))\$
: Starting garbage collection due to dynamic-O space overflow.
: Finished garbage collection due to dynamic-O space overflow.
Time= 9140 msec

(C63) FOR N:1 THRU 3 DO (RP3[N]:SORT(RP3[N]), PRINT("DEP",N,RP3[N]))\$

DEP 1 [P111, P112, P113, P114, P182, P183, P184, P185, P186, P187, P36, P37,
P38, P39, P56, P57, P58, P59, P61, P62, P63, P64, P66, P67, P68, P69, P81, P82,
P83, P84, P86, P87, P88, P89, P91, P92, P93, P94]

DEP 2 [P182, P183, P184, P185, P186, P187]

DEP 3 [P111, P112, P113, P114, P182, P183, P184, P185, P186, P187, P36, P37,
P38, P39, P56, P57, P58, P59, P61, P62, P63, P64, P66, P67, P68, P69, P81, P82,
P83, P84, P86, P87, P88, P89, P91, P92, P93, P94]

Time= 530 msec

(C64) M : 0\$
Time= 0 msec

(C65) FOR N:1 THRU 15 DO
(M:M+1,IF NT3[N]=1 THEN (PP3[M]:SORT(SUBST(LT,PP3[M])),PRINT("LP3",M,PP3[M])))\$

LP3 1 [P88, P89]

LP3 2 [P87, P88]

LP3 3 [P86, P87]

LP3 7 [P63, P64]

LP3 8 [P62, P63]

LP3 9 [P61, P62]

Time= 1300 msec

(C66) FOR N:1 THRU 15 DO
(M:M+1,IF NT3[N]=1 THEN (PP3[M]:SORT(SUBST(LT,PP3[M])),PRINT("LP3",M,PP3[M])))\$

LP3 16 [P83, P84, P88, P89, P93, P94]

LP3 17 [P82, P83, P87, P88, P92, P93]

LP3 18 [P81, P82, P86, P87, P91, P92]

LP3 22 [P58, P59, P63, P64, P68, P69]

LP3 23 [P57, P58, P62, P63, P67, P68]

LP3 24 [P56, P57, P61, P62, P66, P67]

Time= 3030 msec

(C67) FOR N:1 THRU 15 DO
(M:M+1,IF NT3[N]=1 THEN (PP3[M]:SORT(SUBST(LT,PP3[M])),PRINT("LP3",M,PP3[M])))\$

LP3 31 [P113, P114, P182, P183, P184, P185, P186, P187, P63, P64, P88, P89]

LP3 32 [P112, P113, P182, P183, P184, P185, P186, P187, P62, P63, P87, P88]

```

LP3 33 [P111, P112, P182, P183, P184, P185, P186, P187, P61, P62, P86, P87]
LP3 37 [P182, P183, P184, P185, P186, P187, P38, P39, P63, P64, P88, P89]
LP3 38 [P182, P183, P184, P185, P186, P187, P37, P38, P62, P63, P87, P88]
LP3 39 [P182, P183, P184, P185, P186, P187, P36, P37, P61, P62, P86, P87]
Time= 5260 msec

```

```

(C68) (RL4: [R2KP, CIRC, ATT4] , RP4 : SUBST(LT,RL4) )$
Time= 5180 msec

```

```

(C69) FOR N:1 THRU 3 DO ( RP4[N]:SORT( RP4[N] ), PRINT("DEP",N,RP4[N]) )$
DEP 1 [P106, P107, P108, P109, P111, P112, P113, P114, P116, P117, P118, P119,
P136, P137, P138, P139, P182, P183, P184, P185, P186, P187, P61, P62, P63, P64,
P81, P82, P83, P84, P86, P87, P88, P89, P91, P92, P93, P94]
DEP 2 [P182, P183, P184, P185, P186, P187]
DEP 3 [P106, P107, P108, P109, P111, P112, P113, P114, P116, P117, P118, P119,
P136, P137, P138, P139, P182, P183, P184, P185, P186, P187, P61, P62, P63, P64,
P81, P82, P83, P84, P86, P87, P88, P89, P91, P92, P93, P94]
Time= 470 msec

```

```

(C70) M : 0$
Time= 10 msec

```

```

(C71) FOR N:1 THRU 15 DO
(M:M+1,IF NT4[N]=1 THEN (PP4[M]:SORT(SUBST(LT,PP4[M])),PRINT("LP4",M,PP4[M])))$
LP4 1 [P88, P89]
LP4 2 [P87, P88]
LP4 3 [P86, P87]
LP4 13 [P113, P114]
LP4 14 [P112, P113]
LP4 15 [P111, P112]
Time= 1330 msec

```

```

(C72) FOR N:1 THRU 15 DO
(M:M+1,IF NT4[N]=1 THEN (PP4[M]:SORT(SUBST(LT,PP4[M])),PRINT("LP4",M,PP4[M])))$
LP4 16 [P83, P84, P88, P89, P93, P94]
LP4 17 [P82, P83, P87, P88, P92, P93]
LP4 18 [P81, P82, P86, P87, P91, P92]
LP4 28 [P108, P109, P113, P114, P118, P119]
LP4 29 [P107, P108, P112, P113, P117, P118]
LP4 30 [P106, P107, P111, P112, P116, P117]
Time= 3030 msec

```

```

(C73) FOR N:1 THRU 15 DO
(M:M+1,IF NT4[N]=1 THEN (PP4[M]:SORT(SUBST(LT,PP4[M])),PRINT("LP4",M,PP4[M])))$
LP4 31 [P113, P114, P182, P183, P184, P185, P186, P187, P63, P64, P88, P89]
LP4 32 [P112, P113, P182, P183, P184, P185, P186, P187, P62, P63, P87, P88]
LP4 33 [P111, P112, P182, P183, P184, P185, P186, P187, P61, P62, P86, P87]

```

LP4 43 [P113, P114, P138, P139, P182, P183, P184, P185, P186, P187, P88, P89]
LP4 44 [P112, P113, P137, P138, P182, P183, P184, P185, P186, P187, P87, P88]
LP4 45 [P111, P112, P136, P137, P182, P183, P184, P185, P186, P187, P86, P87]
Time= 5040 msec

(C74) /*-----*/
Accumulated Computation Time= 400140 msec
Time= 421880 msec

(D74) DONE

QUIT();

(C75)

%DCL-W-SKPDAT, image data (records not beginning with "\$") ignored

HME4905 job terminated at 23-JAN-1991 09:05:46.65

Sorted/Unsorted:	374	Peak working set size:	4096
Direct I/O count:	580	Peak page file size:	40493
Page faults:	147965	Mounted volumes:	0
Charged CPU time:	0 00:07:11.01	Elapsed time:	0 00:13:18.49

APPENDIX B

MACSYMA CODE TO DIFFERENTIATE THE RESIDUAL

```

/*-----*/
/* RMDER.MAC : GENERAL RESIDUAL EXPRESSION & WING,WAKE UPDATES (K=KUP,K=KLOW) */
/*-----*/
/* MACSYMA PROGRAM TO GENERATE FORTRAN SOURCE CODE FOR THE JACOBIAN & RHS */
/*-----*/
/* DEC 12, 1990 */
/*-----*/
SHOWTIME:TRUE$

RESIDUAL : RIP*TA11P*(P89-P88)
+ RIP*TA12P*(TAJ1*(P88-P83+P89-P84)+TAJ2*(P93-P88+P94-P89))
+ RIP*QXINF*2/DXIC(I)
+S *(RIM*TA11M*(P88-P87)
+ RIM*TA12M*(TAJ1*(P88-P83+P87-P82)+TAJ2*(P93-P88+P92-P87))
+ RIM*QXINF*2/DXIC(I))
+ RJP*TA22P*(P93-P88)
+ RJP*TA21P*(TAI1*(P88-P87+P93-P92)+TAI2*(P89-P88+P94-P93))
+S *(RJ *TA22M*(P88-P83)
+ RJ *TA21M*(TAI1*(P88-P87+P83-P82)+TAI2*(P89-P88+P84-P83)))

+V1*(RKP*TA33P*(P113-P88) + RKP*QZINF*2*XIXXI(J,I)/DZETAC(K))
+V2*(RK *TA33M*(P88 -P63) + RK *QZINF*2*XIXXI(J,I)/DZETAC(K))$

PX(I,J,K) := DXII(I)*(P(J,K,I+1)+S*P(J,K,I)) + QXINF/XIXIP(J,I)$
PY(I,J,K) := (1/2)*(AU1(J)*(P(J ,K,I)-P(J-1,K,I)+P(J ,K,I+1)-P(J-1,K,I+1))
+AU2(J)*(P(J+1,K,I)-P(J ,K,I)+P(J+1,K,I+1)-P(J ,K,I+1)))
+ QXINF*S*XIYIP(J,I)/XIXIP(J,I)$
PZ[0](I,J,K):= (1/2)*(A1K(K)*(P(J,K ,I)-P(J,K-1,I)+P(J,K ,I+1)-P(J,K-1,I+1))
+A2K(K)*(P(J,K+1,I)-P(J,K ,I)+P(J,K+1,I+1)-P(J,K ,I+1)))
+ QZINF$

PZ[1](I,J,K):= (1/2)*(DC1*P(J,K,I )+DC2*P(J,K+1,I )+DC3*P(J,K+2,I )
+DC1*P(J,K,I+1)+DC2*P(J,K+1,I+1)+DC3*P(J,K+2,I+1)) + QZINF$
PZ[2](I,J,K):= (1/2)*(DC4*P(J,K,I )+DC5*P(J,K-1,I )+DC6*P(J,K-2,I )
+DC4*P(J,K,I+1)+DC5*P(J,K-1,I+1)+DC6*P(J,K-2,I+1)) + QZINF$

CI(J) := CC1*P(J,KUP ,ITE)+S*CC2*P(J,KUP +1,ITE)+ CC3*P(J,KUP +2,ITE)
+S*CC4*P(J,KLOW,ITE)+ CC5*P(J,KLOW-1,ITE)+S*CC6*P(J,KLOW-2,ITE)$

PZ[3](I,J,K):= (1/2)*(A1K(K)*(P(J,K ,I)-P(J,K-1,I)+P(J,K ,I+1)-P(J,K-1,I+1))
+A2K(K)*(P(J,K+1,I)-P(J,K ,I)+P(J,K+1,I+1)-P(J,K ,I+1)))
+ QZINF - A1K(K)*CI(J)$
PZ[4](I,J,K):= (1/2)*(A1K(K)*(P(J,K ,I)-P(J,K-1,I)+P(J,K ,I+1)-P(J,K-1,I+1))
+A2K(K)*(P(J,K+1,I)-P(J,K ,I)+P(J,K+1,I+1)-P(J,K ,I+1)))
+ QZINF - A2K(K)*CI(J)$

U(I,J,K) := A11R (J,I)*PX(I,J,K) + XIYIP(J,I)*PY(I,J,K)$
V(I,J,K) := XIYIP(J,I)*PX(I,J,K) + PY(I,J,K)$

FOR N:0 THRU 4 DO (
RH [N](I,J,K):=(1+G1*(U(I,J,K)*PX(I,J,K)+V(I,J,K)*PY(I,J,K)+PZ[N](I,J,K)*2))*G2,
SG [N](I,J,K):= G3 * ( (RH[N](I,J,K)+RH[N](I-1,J,K))*G4 + G5 ) * NP
RIP[N](I,J,K):= SG(I,J,K)*(RH[N](I,J,K)+S*RH[N](I-1,J,K)) + RH[N](I-1,J,K)
RIM[N](I,J,K):= RIP[N](I-1,J,K) )$

R1K (I,J,K):=(3*RIP[1](I,J,K)+3*RIM[1](I,J,K)+S*RIP[1](I,J,K+1)+S*RIM[1](I,J,K+1))/4$
R1KU(I,J,K):=(3*RIP[2](I,J,K)+3*RIM[2](I,J,K)+S*RIP[2](I,J,K-1)+S*RIM[2](I,J,K-1))/4$
R2KW(I,J,K):=(RIP[3](I,J,K)+ RIM[3](I,J,K)+ RIP[3](I,J,K-1)+ RIM[3](I,J,K-1))/4$
R2KP(I,J,K):=(RIP[4](I,J,K)+ RIM[4](I,J,K)+ RIP[4](I,J,K+1)+ RIM[4](I,J,K+1))/4$

FU (I,J) := CC1*P(J,K,I) + S*CC2*P(J,K+1,I) + CC3*P(J,K+2,I)$
FXU (I,J) := TAI1*(FU(I,J)+S*FU(I-1,J))+TAI2*(FU(I+1,J)+S*FU(I,J))$
FYU (I,J) := TAJ1*(FU(I,J)+S*FU(I,J-1))+TAJ2*(FU(I,J+1)+S*FU(I,J))$
UU (I,J) := (XIXX(J,I)*2+XIYX(J,I)*2)*FXU(I,J) + XIYX(J,I)*FYU(I,J) + XIXX(J,I)*QXINF$
VU (I,J) := XIYX(J,I)*FXU(I,J) + FYU(I,J)$
DDPU(I,J) := (UU(I,J)*DDZXU+VU(I,J)*DDZYU-QZINF) * DZETA(KLOW)$

FL (I,J) := CC4*P(J,K,I) + S*CC5*P(J,K-1,I) + CC6*P(J,K-2,I)$
FXL (I,J) := TAI1*(FL(I,J)+S*FL(I-1,J))+TAI2*(FL(I+1,J)+S*FL(I,J))$
FYL (I,J) := TAJ1*(FL(I,J)+S*FL(I,J-1))+TAJ2*(FL(I,J+1)+S*FL(I,J))$
UL (I,J) := (XIXX(J,I)*2+XIYX(J,I)*2)*FXL(I,J) + XIYX(J,I)*FYL(I,J) + XIXX(J,I)*QXINF$
VL (I,J) := XIYX(J,I)*FXL(I,J) + FYL(I,J)$
DDPL(I,J) := (UL(I,J)*DDZXL+VL(I,J)*DDZYL-QZINF) * DZETA(KLOW)$

(ANOFI1 : S *(R1K * TA33M * DDPU + R1K *QZINF*2*XIXXI(J,I)/DZETAC(K)),
ANOFI2 : R1KU * TA33P * DDPL + R1KU*QZINF*2*XIXXI(J,I)/DZETAC(K) ,
ANOFI3 : R2KW * TA33M * CIR
ANOFI4 : S * R2KP * TA33P * CIR )$

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(NI : [I ,I-1,I-2,I ,I-1,I-2,I ,I-1,I-2,I ,I-1,I-2,I ,I-1,I-2],
NU : [J ,J ,J ,J-1,J-1,J-1,J ,J ,J ,J+1,J+1,J+1,J ,J ,J ],
NK : [K ,K ,K ,K ,K ,K ,K ,K-1,K-1,K-1,K ,K ,K ,K+1,K+1,K+1],
NT[0] : [1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ,1 ],
NT[1] : [1 ,1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ],
NT[2] : [1 ,1 ,1 ,0 ,0 ,0 ,1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ],
NT[3] : [1 ,1 ,1 ,0 ,0 ,0 ,1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ],
NT[4] : [1 ,1 ,1 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ,0 ])$
FOR L:0 THRU 4 DO (M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PP[L,M]:PX (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PP[L,M]:PY (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PP[L,M]:PZ[L](NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PP[L,M]:U (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PP[L,M]:V (NI[N],NU[N],NK[N]))$
KILL(PX,PY,PZ[0],PZ[1],PZ[2],PZ[3],PZ[4],U,V)$
FOR L:0 THRU 4 DO (M : 0,
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PF[L,M]:PX (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PF[L,M]:PY (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PF[L,M]:PZ[L](NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PF[L,M]:U (NI[N],NU[N],NK[N])),
FOR N:1 THRU 15 DO (M:M+1,IF PART(NT[L],N)=1 THEN PF[L,M]:V (NI[N],NU[N],NK[N]))$

RTTO:
[P(J ,K-2,I-2)=P36 ,P(J ,K-2,I-1)=P37 ,P(J ,K-2,I)=P38 ,P(J ,K-2,I+1)=P39 ,
P(J-1,K-1,I-2)=P56 ,P(J-1,K-1,I-1)=P57 ,P(J-1,K-1,I)=P58 ,P(J-1,K-1,I+1)=P59 ,
P(J ,K-1,I-2)=P61 ,P(J ,K-1,I-1)=P62 ,P(J ,K-1,I)=P63 ,P(J ,K-1,I+1)=P64 ,
P(J+1,K-1,I-2)=P66 ,P(J+1,K-1,I-1)=P67 ,P(J+1,K-1,I)=P68 ,P(J+1,K-1,I+1)=P69 ,
P(J-2,K ,I-2)=P76 ,P(J-2,K ,I-1)=P77 ,P(J-2,K ,I)=P78 ,P(J-2,K ,I+1)=P79 ,
P(J-1,K ,I-2)=P81 ,P(J-1,K ,I-1)=P82 ,P(J-1,K ,I)=P83 ,P(J-1,K ,I+1)=P84 ,
P(J ,K ,I-2)=P86 ,P(J ,K ,I-1)=P87 ,P(J ,K ,I)=P88 ,P(J ,K ,I+1)=P89 ,
P(J+1,K ,I-2)=P91 ,P(J+1,K ,I-1)=P92 ,P(J+1,K ,I)=P93 ,P(J+1,K ,I+1)=P94 ,
P(J-2,K ,I-2)=P96 ,P(J-2,K ,I-1)=P97 ,P(J-2,K ,I)=P98 ,P(J-2,K ,I+1)=P99 ,
P(J-1,K+1,I-2)=P106 ,P(J-1,K+1,I-1)=P107 ,P(J-1,K+1,I)=P108 ,P(J-1,K+1,I+1)=P109 ,
P(J ,K+1,I-2)=P111 ,P(J ,K+1,I-1)=P112 ,P(J ,K+1,I)=P113 ,P(J ,K+1,I+1)=P114 ,
P(J+1,K+1,I-2)=P116 ,P(J+1,K+1,I-1)=P117 ,P(J+1,K+1,I)=P118 ,P(J+1,K+1,I+1)=P119 ,
P(J ,K+2,I-2)=P136 ,P(J ,K+2,I-1)=P137 ,P(J ,K+2,I)=P138 ,P(J ,K+2,I+1)=P139]$
RTT1:
[P(J-1,K ,I-2)=P81 ,P(J-1,K ,I-1)=P82 ,P(J-1,K ,I)=P83 ,P(J-1,K ,I+1)=P84 ,
P(J ,K ,I-2)=P86 ,P(J ,K ,I-1)=P87 ,P(J ,K ,I)=P88 ,P(J ,K ,I+1)=P89 ,
P(J+1,K ,I-2)=P91 ,P(J+1,K ,I-1)=P92 ,P(J+1,K ,I)=P93 ,P(J+1,K ,I+1)=P94 ,
P(J-1,K+1,I-2)=P106 ,P(J-1,K+1,I-1)=P107 ,P(J-1,K+1,I)=P108 ,P(J-1,K+1,I+1)=P109 ,
P(J ,K+1,I-2)=P111 ,P(J ,K+1,I-1)=P112 ,P(J ,K+1,I)=P113 ,P(J ,K+1,I+1)=P114 ,
P(J+1,K+1,I-2)=P116 ,P(J+1,K+1,I-1)=P117 ,P(J+1,K+1,I)=P118 ,P(J+1,K+1,I+1)=P119 ,
P(J-1,K+2,I)=P133 ,
P(J ,K+2,I-2)=P136 ,P(J ,K+2,I-1)=P137 ,P(J ,K+2,I)=P138 ,P(J ,K+2,I+1)=P139 ,
P(J+1,K+2,I)=P143 ,
P(J ,K+3,I-2)=P161 ,P(J ,K+3,I-1)=P162 ,P(J ,K+3,I)=P163 ,P(J ,K+3,I+1)=P164]$
RTT2:
[P(J ,K-3,I-2)=P11 ,P(J ,K-3,I-1)=P12 ,P(J ,K-3,I)=P13 ,P(J ,K-3,I+1)=P14 ,
P(J-1,K-2,I)=P33 ,
P(J ,K-2,I-2)=P36 ,P(J ,K-2,I-1)=P37 ,P(J ,K-2,I)=P38 ,P(J ,K-2,I+1)=P39 ,
P(J+1,K-2,I)=P43 ,
P(J-1,K-1,I-2)=P56 ,P(J-1,K-1,I-1)=P57 ,P(J-1,K-1,I)=P58 ,P(J-1,K-1,I+1)=P59 ,
P(J ,K-1,I-2)=P61 ,P(J ,K-1,I-1)=P62 ,P(J ,K-1,I)=P63 ,P(J ,K-1,I+1)=P64 ,
P(J+1,K-1,I-2)=P66 ,P(J+1,K-1,I-1)=P67 ,P(J+1,K-1,I)=P68 ,P(J+1,K-1,I+1)=P69 ,
P(J-1,K ,I-2)=P81 ,P(J-1,K ,I-1)=P82 ,P(J-1,K ,I)=P83 ,P(J-1,K ,I+1)=P84 ,
P(J ,K ,I-2)=P86 ,P(J ,K ,I-1)=P87 ,P(J ,K ,I)=P88 ,P(J ,K ,I+1)=P89 ,
P(J+1,K ,I-2)=P91 ,P(J+1,K ,I-1)=P92 ,P(J+1,K ,I)=P93 ,P(J+1,K ,I+1)=P94 ]$
RTT3:
[P(J ,K-2,I-2)=P36 ,P(J ,K-2,I-1)=P37 ,P(J ,K-2,I)=P38 ,P(J ,K-2,I+1)=P39 ,
P(J-1,K-1,I-2)=P56 ,P(J-1,K-1,I-1)=P57 ,P(J-1,K-1,I)=P58 ,P(J-1,K-1,I+1)=P59 ,
P(J ,K-1,I-2)=P61 ,P(J ,K-1,I-1)=P62 ,P(J ,K-1,I)=P63 ,P(J ,K-1,I+1)=P64 ,
P(J+1,K-1,I-2)=P66 ,P(J+1,K-1,I-1)=P67 ,P(J+1,K-1,I)=P68 ,P(J+1,K-1,I+1)=P69 ,
P(J-1,K ,I-2)=P81 ,P(J-1,K ,I-1)=P82 ,P(J-1,K ,I)=P83 ,P(J-1,K ,I+1)=P84 ,
P(J ,K ,I-2)=P86 ,P(J ,K ,I-1)=P87 ,P(J ,K ,I)=P88 ,P(J ,K ,I+1)=P89 ,
P(J+1,K ,I-2)=P91 ,P(J+1,K ,I-1)=P92 ,P(J+1,K ,I)=P93 ,P(J+1,K ,I+1)=P94 ,
P(J ,K+1,I-2)=P111 ,P(J ,K+1,I-1)=P112 ,P(J ,K+1,I)=P113 ,P(J ,K+1,I+1)=P114 ,
P(J ,KLOW-2,ITE)=P182 ,P(J ,KLOW-1,ITE)=P183 ,P(J ,KLOW ,ITE)=P184 ,
P(J ,KUP ,ITE)=P185 ,P(J ,KUP +1,ITE)=P186 ,P(J ,KUP +2,ITE)=P187 ]$
RTT4:
[P(J ,K-1,I-2)=P61 ,P(J ,K-1,I-1)=P62 ,P(J ,K-1,I)=P63 ,P(J ,K-1,I+1)=P64 ,
P(J-1,K ,I-2)=P81 ,P(J-1,K ,I-1)=P82 ,P(J-1,K ,I)=P83 ,P(J-1,K ,I+1)=P84 ,
P(J ,K ,I-2)=P86 ,P(J ,K ,I-1)=P87 ,P(J ,K ,I)=P88 ,P(J ,K ,I+1)=P89 ,
P(J+1,K ,I-2)=P91 ,P(J+1,K ,I-1)=P92 ,P(J+1,K ,I)=P93 ,P(J+1,K ,I+1)=P94 ,
P(J-1,K+1,I-2)=P106 ,P(J-1,K+1,I-1)=P107 ,P(J-1,K+1,I)=P108 ,P(J-1,K+1,I+1)=P109 ,
P(J ,K+1,I-2)=P111 ,P(J ,K+1,I-1)=P112 ,P(J ,K+1,I)=P113 ,P(J ,K+1,I+1)=P114 ,
P(J+1,K+1,I-2)=P116 ,P(J+1,K+1,I-1)=P117 ,P(J+1,K+1,I)=P118 ,P(J+1,K+1,I+1)=P119 ,
P(J ,K+2,I-2)=P136 ,P(J ,K+2,I-1)=P137 ,P(J ,K+2,I)=P138 ,P(J ,K+2,I+1)=P139 ,
P(J ,KLOW-2,ITE)=P182 ,P(J ,KLOW-1,ITE)=P183 ,P(J ,KLOW ,ITE)=P184 ,
P(J ,KUP ,ITE)=P185 ,P(J ,KUP +1,ITE)=P186 ,P(J ,KUP +2,ITE)=P187 ]$

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(LPP[1] :[P88 ,P89 ], LPP0[31] :[P63 ,P64 ,P88 ,P89 ,P113,P114],
LPP[2] :[P87 ,P88 ], LPP0[32] :[P62 ,P63 ,P87 ,P88 ,P112,P113],
LPP[3] :[P86 ,P87 ], LPP0[33] :[P61 ,P62 ,P86 ,P87 ,P111,P112],
LPP[4] :[P83 ,P84 ], LPP0[34] :[P58 ,P59 ,P83 ,P84 ,P108,P109],
LPP[5] :[P82 ,P83 ], LPP0[35] :[P57 ,P58 ,P82 ,P83 ,P107,P108],
LPP[6] :[P81 ,P82 ], LPP0[36] :[P56 ,P57 ,P81 ,P82 ,P106,P107],
LPP[7] :[P63 ,P64 ], LPP0[37] :[P38 ,P39 ,P63 ,P64 ,P88 ,P89 ],
LPP[8] :[P62 ,P63 ], LPP0[38] :[P37 ,P38 ,P62 ,P63 ,P87 ,P88 ],
LPP[9] :[P61 ,P62 ], LPP0[39] :[P36 ,P37 ,P61 ,P62 ,P86 ,P87 ],
LPP[10] :[P93 ,P94 ], LPP0[40] :[P68 ,P69 ,P93 ,P94 ,P118,P119],
LPP[11] :[P92 ,P93 ], LPP0[41] :[P67 ,P68 ,P92 ,P93 ,P117,P118],
LPP[12] :[P91 ,P92 ], LPP0[42] :[P66 ,P67 ,P91 ,P92 ,P116,P117],
LPP[13] :[P113,P114], LPP0[43] :[P88 ,P89 ,P113,P114,P138,P139],
LPP[14] :[P112,P113], LPP0[44] :[P87 ,P88 ,P112,P113,P137,P138],
LPP[15] :[P111,P112], LPP0[45] :[P86 ,P87 ,P111,P112,P136,P137],
LPP[16] :[P83 ,P84 ,P88 ,P89 ,P93 ,P94 ], LPP[46]:LPP[16], LPP[61]:LPP[16],
LPP[17] :[P82 ,P83 ,P87 ,P88 ,P92 ,P93 ], LPP[47]:LPP[17], LPP[62]:LPP[17],
LPP[18] :[P81 ,P82 ,P86 ,P87 ,P91 ,P92 ], LPP[48]:LPP[18], LPP[63]:LPP[18],
LPP[19] :[P78 ,P79 ,P83 ,P84 ,P88 ,P89 ], LPP[49]:LPP[19], LPP[64]:LPP[19],
LPP[20] :[P77 ,P78 ,P82 ,P83 ,P87 ,P88 ], LPP[50]:LPP[20], LPP[65]:LPP[20],
LPP[21] :[P76 ,P77 ,P81 ,P82 ,P86 ,P87 ], LPP[51]:LPP[21], LPP[66]:LPP[21],
LPP[22] :[P58 ,P59 ,P63 ,P64 ,P68 ,P69 ], LPP[52]:LPP[22], LPP[67]:LPP[22],
LPP[23] :[P57 ,P58 ,P62 ,P63 ,P67 ,P68 ], LPP[53]:LPP[23], LPP[68]:LPP[23],
LPP[24] :[P56 ,P57 ,P61 ,P62 ,P66 ,P67 ], LPP[54]:LPP[24], LPP[69]:LPP[24],
LPP[25] :[P88 ,P89 ,P93 ,P94 ,P98 ,P99 ], LPP[55]:LPP[25], LPP[70]:LPP[25],
LPP[26] :[P87 ,P88 ,P92 ,P93 ,P97 ,P98 ], LPP[56]:LPP[26], LPP[71]:LPP[26],
LPP[27] :[P86 ,P87 ,P91 ,P92 ,P96 ,P97 ], LPP[57]:LPP[27], LPP[72]:LPP[27],
LPP[28] :[P108,P109,P113,P114,P118,P119], LPP[58]:LPP[28], LPP[73]:LPP[28],
LPP[29] :[P107,P108,P112,P113,P117,P118], LPP[59]:LPP[29], LPP[74]:LPP[29],
LPP[30] :[P106,P107,P111,P112,P116,P117], LPP[60]:LPP[30], LPP[75]:LPP[30],
LPP1[31]:[P88 ,P89 ,P113,P114,P138,P139],LPP2[31]:[P38,P39,P63,P64,P88 ,P89 ],
LPP1[32]:[P87 ,P88 ,P112,P113,P137,P138],LPP2[32]:[P37,P38,P62,P63,P87 ,P88 ],
LPP1[33]:[P86 ,P87 ,P111,P112,P136,P137],LPP2[33]:[P36,P37,P61,P62,P86 ,P87 ],
LPP1[34]:[P83 ,P84 ,P108,P109,P133,P134],LPP2[34]:[P33,P34,P58,P59,P83 ,P84 ],
LPP1[35]:[P82 ,P83 ,P107,P108,P132,P133],LPP2[35]:[P32,P33,P57,P58,P82 ,P83 ],
LPP1[36]:[P81 ,P82 ,P106,P107,P131,P132],LPP2[36]:[P31,P32,P56,P57,P81 ,P82 ],
LPP1[37]:[P63 ,P64 ,P88 ,P89 ,P113,P114],LPP2[37]:[P13,P14,P38,P39,P63 ,P64 ],
LPP1[38]:[P62 ,P63 ,P87 ,P88 ,P112,P113],LPP2[38]:[P12,P13,P37,P38,P62 ,P63 ],
LPP1[39]:[P61 ,P62 ,P86 ,P87 ,P111,P112],LPP2[39]:[P11,P12,P36,P37,P61 ,P62 ],
LPP1[40]:[P93 ,P94 ,P118,P119,P143,P144],LPP2[40]:[P43,P44,P68,P69,P93 ,P94 ],
LPP1[41]:[P92 ,P93 ,P117,P118,P142,P143],LPP2[41]:[P42,P43,P67,P68,P92 ,P93 ],
LPP1[42]:[P91 ,P92 ,P116,P117,P141,P142],LPP2[42]:[P41,P42,P66,P67,P91 ,P92 ],
LPP1[43]:[P113,P114,P138,P139,P163,P164],LPP2[43]:[P63,P64,P88 ,P89 ,P113,P114],
LPP1[44]:[P112,P113,P137,P138,P162,P163],LPP2[44]:[P62,P63,P87 ,P88 ,P112,P113],
LPP1[45]:[P111,P112,P136,P137,P161,P162],LPP2[45]:[P61,P62,P86 ,P87 ,P111,P112])$
SCIR: [P182,P183,P184,P185,P186,P187]$
(LPP3[31]:[P63 ,P64 ,P88 ,P89 ,P113,P114],LPP3[31]:APPEND(LPP3[31],SCIR),
LPP3[32]:[P62 ,P63 ,P87 ,P88 ,P112,P113],LPP3[32]:APPEND(LPP3[32],SCIR),
LPP3[33]:[P61 ,P62 ,P86 ,P87 ,P111,P112],LPP3[33]:APPEND(LPP3[33],SCIR),
LPP3[34]:[P58 ,P59 ,P83 ,P84 ,P108,P109],
LPP3[35]:[P57 ,P58 ,P82 ,P83 ,P107,P108],
LPP3[36]:[P56 ,P57 ,P81 ,P82 ,P106,P107],
LPP3[37]:[P38 ,P39 ,P63 ,P64 ,P88 ,P89 ],LPP3[37]:APPEND(LPP3[37],SCIR),
LPP3[38]:[P37 ,P38 ,P62 ,P63 ,P87 ,P88 ],LPP3[38]:APPEND(LPP3[38],SCIR),
LPP3[39]:[P36 ,P37 ,P61 ,P62 ,P86 ,P87 ],LPP3[39]:APPEND(LPP3[39],SCIR),
LPP3[40]:[P68 ,P69 ,P93 ,P94 ,P118,P119],
LPP3[41]:[P67 ,P68 ,P92 ,P93 ,P117,P118],
LPP3[42]:[P66 ,P67 ,P91 ,P92 ,P116,P117],
LPP3[43]:[P88 ,P89 ,P113,P114,P138,P139],LPP3[43]:APPEND(LPP3[43],SCIR),
LPP3[44]:[P87 ,P88 ,P112,P113,P137,P138],LPP3[44]:APPEND(LPP3[44],SCIR),
LPP3[45]:[P86 ,P87 ,P111,P112,P136,P137],LPP3[45]:APPEND(LPP3[45],SCIR))$

SRIP :[P62,P63,P64,P82,P83,P84,P87,P88,P89,P92,P93,P94,P112,P113,P114]$
SRIM :[P61,P62,P63,P81,P82,P83,P86,P87,P88,P91,P92,P93,P111,P112,P113]$
SRJ :[P56,P57,P58,P59,P61,P62,P63,P64,P76 ,P77 ,P78 ,P79 ,P81 ,P82 ,P83 ,P84 ,
P86 ,P87 ,P88 ,P89 ,P91 ,P92 ,P93 ,P94 ,P106 ,P107 ,P108 ,P109 ,P111 ,P112 ,P113 ,P114]$
SRK :[P36,P37,P38,P39,P56,P57,P58,P59,P61,P62,P63,P64,P66 ,P67 ,P68 ,P69 ,
P81 ,P82 ,P83 ,P84 ,P86 ,P87 ,P88 ,P89 ,P91 ,P92 ,P93 ,P94 ,P111 ,P112 ,P113 ,P114]$
SRJP :[P61,P62,P63,P64,P66,P67,P68,P69,P81 ,P82 ,P83 ,P84 ,P86 ,P87 ,P88 ,P89 ,
P91 ,P92 ,P93 ,P94 ,P96 ,P97 ,P98 ,P99 ,P111 ,P112 ,P113 ,P114 ,P116 ,P117 ,P118 ,P119]$
SRKP :[P61,P62,P63,P64,P81,P82,P83,P84,P86,P87,P88,P89,P91,P92,P93 ,
P94 ,P106 ,P107 ,P108 ,P109 ,P111 ,P112 ,P113 ,P114 ,P116 ,P117 ,P118 ,P119 ,
P136 ,P137 ,P138 ,P139]$
SR1K :[P81,P82,P83,P84,P86,P87,P88,P89,P91,P92,P93,P94,P106,P107,P108 ,
P109 ,P111 ,P112 ,P113 ,P114 ,P116 ,P117 ,P118 ,P119 ,P136 ,P137 ,P138 ,P139 ,
P161 ,P162 ,P163 ,P164]$
SDPU :[P83,P87,P88,P89,P93,P108,P112,P113,P114,P118,P133,P137,P138,P139,P143]$
SR1KU:[P11,P12,P13,P14,P36,P37,P38,P39,P56,P57,P58,P59,P61,P62,P63,P64 ,
P66 ,P67 ,P68 ,P69 ,P81 ,P82 ,P83 ,P84 ,P86 ,P87 ,P88 ,P89 ,P91 ,P92 ,P93 ,P94]$
SDPLO:[P33,P37,P38,P39,P43,P58,P62,P63,P64 ,P68 ,P83 ,P87 ,P88 ,P89 ,P93]$

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SR2KW:APPEND(SRK ,[P182,P183,P184,P185,P186,P187])$
SR2KP:APPEND(SRKP,[P182,P183,P184,P185,P186,P187])$

RTTW :[P(J ,KLOW-2,ITE)=P182, P(J ,KLOW-1,ITE)=P183, P(J ,KLOW ,ITE)=P184,
      P(J ,KUP ,ITE)=P185, P(J ,KUP +1,ITE)=P186, P(J ,KUP +2,ITE)=P187]$
LUKI :[J-2=JM2, J-1=JM1, J+1=JP1, J+2=JP2, K-2=KM2, K-1=KM1, K+1=KP1, K+2=KP2,
      I-2=IM2, I-1=IM1, I+1=IP1, I+2=IP2]$
/*-----*/
( MATCHDECLARE([DIFF,A,B],TRUE), TELLSIMP('DIFF(A,B),CONCAT(A,B)) )$

DEPENDS(RIP,SRIP,RIM,SRIM,RJ,SRJ,RK,SRK,RJP,SRJP,RKP,SRKP)$
FOR M:1 THRU LENGTH(RTT0 ) DO ( DER [M]: DIFF(RESIDUAL,RHS(RTT0[M])) )$
REMOVE([RIP,RIM,RJ,RK,RJP,RKP],DEPENDENCY)$

DEPENDS(R1K,SR1K,DDPU,SDPU,R1KU,SR1KU,DDPL,SDPLO,R2KW,SR2KW,R2KP,SR2KP,CIR,SCIR)$
FOR M:1 THRU LENGTH(RTT1) DO ( DER1[M]: DIFF(ANOFI1,RHS(RTT1[M])) )$
FOR M:1 THRU LENGTH(RTT2) DO ( DER2[M]: DIFF(ANOFI2,RHS(RTT2[M])) )$
FOR M:1 THRU LENGTH(RTT3) DO ( DER3[M]: DIFF(ANOFI3,RHS(RTT3[M])) )$
FOR M:1 THRU LENGTH(RTT4) DO ( DER4[M]: DIFF(ANOFI4,RHS(RTT4[M])) )$
REMOVE([R1K,DDPU,R1KU,DDPL,R2KW,R2KP,CIR],DEPENDENCY)$

( SDES:[XD1,XD2,XD3,XD4,XD5], SDES1:[XD1,XD2], SDES2:[XD3,XD4,XD5] )$
DEPENDS([QXINF,QZINF],SDES1,[DDZXU,DDZYU,DDZXL,DDZYL],SDES2)$

DEPENDS([RIP,RIM,RJ,RK,RJP,RKP],SDES1)$
FOR M:1 THRU LENGTH(SDES1) DO ( DRS [M]: DIFF(RESIDUAL,SDES1[M]) )$
REMOVE([RIP,RIM,RJ,RK,RJP,RKP],DEPENDENCY)$

DEPENDS([R1K,R1KU,R2KW,R2KP],SDES1,[DDPU,DDPL],SDES)$
FOR M:1 THRU LENGTH(SDES ) DO ( DRS1[M]: DIFF(ANOFI1,SDES[M]),
                                DRS2[M]: DIFF(ANOFI2,SDES[M]),
                                DRS3[M]: DIFF(ANOFI3,SDES[M]),
                                DRS4[M]: DIFF(ANOFI4,SDES[M]) )$
REMOVE([R1K,R1KU,R2KW,R2KP,DDPU,DDPL],DEPENDENCY)$
/*-----*/
(PFO: MAKELIST (PF[0,N]=CONCAT(PO,N),N,1,75),
 PF1: MAKELIST (PF[1,N]=CONCAT(PA,N),N,1,75),
 PF2: MAKELIST (PF[2,N]=CONCAT(PB,N),N,1,75),
 PF3: MAKELIST (PF[3,N]=CONCAT(PC,N),N,1,75),
 PF4: MAKELIST (PF[4,N]=CONCAT(PD,N),N,1,75))$

(LT : SUBST(PFO, [RIP[O](I,J,K), RIM[O](I,J,K),
              RIP[O](I,J-1,K), RIM[O](I,J-1,K), RIP[O](I,J,K-1), RIM[O](I,J,K-1),
              RIP[O](I,J+1,K), RIM[O](I,J+1,K), RIP[O](I,J,K+1), RIM[O](I,J,K+1)]),
 LR : [RIP, RIM, RIPJM, RIMJM, RIPKM, RIMKM, RIPJP, RIMJP, RIPKP, RIMKP],
 FOR N:1 THRU 10 DO (LT[N] : SUBST(LUKI,LT[N]), LR[N] :: LT[N]))$
(RJ : (1/4) * (RIP+RIM+RIPJM+RIMJM), RJP : (1/4) * (RIPJP+RIMJP+RIP+RIM),
 RK : (1/4) * (RIP+RIM+RIPKM+RIMKM), RKP : (1/4) * (RIPKP+RIMKP+RIP+RIM))$

FOR N:31 THRU 45 DO ( LPP[N] : LPP0[N] )$
FOR N:1 THRU 75 DO ( DEPENDS(CONCAT(PO,N),LPP[N]) )$
FOR L:1 THRU LENGTH(SRIP) DO ( DRIP[L]: DIFF(RIP,SRIP[L]) )$
FOR L:1 THRU LENGTH(SRIM) DO ( DRIM[L]: DIFF(RIM,SRIM[L]) )$
FOR L:1 THRU LENGTH(SRJ ) DO ( DRJ [L]: DIFF(RJ ,SRJ [L]) )$
FOR L:1 THRU LENGTH(SRK ) DO ( DRK [L]: DIFF(RK ,SRK [L]) )$
FOR L:1 THRU LENGTH(SRJP) DO ( DRJP[L]: DIFF(RJP,SRJP[L]) )$
FOR L:1 THRU LENGTH(SRKP) DO ( DRKP[L]: DIFF(RKP,SRKP[L]) )$

( R1K : SUBST(PF1, R1K ()), R1K : SUBST(LUKI,R1K ),
  R1KU: SUBST(PF2, R1KU()), R1KU: SUBST(LUKI,R1KU),
  R2KW: SUBST(PF3, R2KW()), R2KW: SUBST(LUKI,R2KW),
  R2KP: SUBST(PF4, R2KP()), R2KP: SUBST(LUKI,R2KP),
  DDPU: SUBST(RTT1,DDPU()), DDPU: SUBST(LUKI,DDPU),
  DDPL: SUBST(RTT2,DDPL()), DDPL: SUBST(LUKI,DDPL), CIR: SUBST(RTTW,CI(J)) )$

FOR N:31 THRU 45 DO ( LPP[N] : LPP1[N] )$
FOR N:1 THRU 75 DO ( DEPENDS(CONCAT(PA,N),LPP[N]) )$
FOR N:31 THRU 45 DO ( LPP[N] : LPP2[N] )$
FOR N:1 THRU 75 DO ( DEPENDS(CONCAT(PB,N),LPP[N]) )$
FOR N:31 THRU 45 DO ( LPP[N] : LPP3[N] )$
FOR N:1 THRU 75 DO ( DEPENDS([CONCAT(PC,N),CONCAT(PD,N)],LPP[N]) )$

FOR L:1 THRU LENGTH(SR1K ) DO ( DR1K [L] : DIFF(R1K ,SR1K [L]) )$
FOR L:1 THRU LENGTH(SR1KU) DO ( DR1KU[L] : DIFF(R1KU,SR1KU[L]) )$
FOR L:1 THRU LENGTH(SR2KW) DO ( DR2KW[L] : DIFF(R2KW,SR2KW[L]) )$
FOR L:1 THRU LENGTH(SR2KP) DO ( DR2KP[L] : DIFF(R2KP,SR2KP[L]) )$
FOR L:1 THRU LENGTH(SDPU ) DO ( DDDPU[L] : DIFF(DDPU,SDPU [L]) )$
FOR L:1 THRU LENGTH(SDPLO) DO ( DDDPL[L] : DIFF(DDPL,SDPLO[L]) )$
FOR L:1 THRU LENGTH(SCIR ) DO ( DCIR [L] : DIFF(CIR ,SCIR [L]) )$
/*-----*/

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FOR N:1 THRU 75 DO DEPENDS
  ([CONCAT(PO,N),CONCAT(PA,N),CONCAT(PB,N),CONCAT(PC,N),CONCAT(PD,N)],SDES1)$

FOR L:1 THRU LENGTH(SDES1) DO ( DNRIP [L]: DIFF(RIP , SDSE1[L]),
                                DNRIM [L]: DIFF(RIM , SDSE1[L]),
                                DNRJ [L]: DIFF(RJ , SDSE1[L]),
                                DNRK [L]: DIFF(RK , SDSE1[L]),
                                DNRJP [L]: DIFF(RJP , SDSE1[L]),
                                DNRKP [L]: DIFF(RKP , SDSE1[L]),
                                DNR1K [L]: DIFF(R1K , SDSE1[L]),
                                DNR1KU[L]: DIFF(R1KU, SDSE1[L]),
                                DNR2KW[L]: DIFF(R2KW, SDSE1[L]),
                                DNR2KP[L]: DIFF(R2KP, SDSE1[L]) )$

FOR L:1 THRU LENGTH(SDES ) DO ( DNDPU [L]: DIFF(DDPU, SDES [L]),
                                DNDPLO[L]: DIFF(DDPL, SDES [L]) )$

KILL(RULES)$
/*-----*/
PPSUB(I) := FOR N: 1 THRU 75 DO ( FOR M: 1 THRU LENGTH(LPP[N])
                                DO (TD:PART(LPP[N],M), PP[I,N]:SUBST(TD,EV(TD),PP[I,N])) )$

(FOR N :31 THRU 45 DO (LPP [N] : LPPO [N] ),
FOR L : 1 THRU LENGTH(RTTO) DO (RHS(RTTO[L]) :: LHS(RTTO[L])), PPSUB(0))$
(FOR N :31 THRU 45 DO (LPP [N] : LPP1 [N] ),
FOR L : 1 THRU LENGTH(RTT1) DO (RHS(RTT1[L]) :: LHS(RTT1[L])), PPSUB(1))$
(FOR N :31 THRU 45 DO (LPP [N] : LPP2 [N] ),
FOR L : 1 THRU LENGTH(RTT2) DO (RHS(RTT2[L]) :: LHS(RTT2[L])), PPSUB(2))$
(FOR N :31 THRU 45 DO (LPP [N] : LPP3 [N] ),
FOR L : 1 THRU LENGTH(RTT3) DO (RHS(RTT3[L]) :: LHS(RTT3[L])), PPSUB(3))$
(FOR L : 1 THRU LENGTH(RTT4) DO (RHS(RTT4[L]) :: LHS(RTT4[L])), PPSUB(4))$

FOR L:0 THRU 4 DO (FOR N:1 THRU 75 DO (PP[L,N]:SUBST(LJKI,PP[L,N])))$

FOR L:1 THRU LENGTH(RTTO) DO ( RTTO[L] : SUBST(LJKI,RTTO[L]) )$
FOR L:1 THRU LENGTH(RTT1) DO ( RTT1[L] : SUBST(LJKI,RTT1[L]) )$
FOR L:1 THRU LENGTH(RTT2) DO ( RTT2[L] : SUBST(LJKI,RTT2[L]) )$
FOR L:1 THRU LENGTH(RTT3) DO ( RTT3[L] : SUBST(LJKI,RTT3[L]) )$
FOR L:1 THRU LENGTH(RTT4) DO ( RTT4[L] : SUBST(LJKI,RTT4[L]) )$
/*-----*/
/*          DEFINE FUNCTIONS USED IN WRITING SOURCE OUTPUT          */
/*-----*/
TITLET(ST1,ST2,ST3) :=
  ( GENTRAN(LITERAL(TAB,EVAL(ST1),CR)),
    GENTRAN(LITERAL("C",TAB,EVAL(ST2),CR,"C",CR,TAB,EVAL(ST3),CR)) )$
TITLEB() :=
  GENTRAN(LITERAL("C",CR,TAB,"RETURN",CR,TAB,"END",CR))$
TITLEC(ST1) :=
  GENTRAN(LITERAL("C",CR,TAB,EVAL(ST1),CR))$
TITLE1(LNR,RTT) :=
  ( GENTRAN(LITERAL("C",CR,"C",TAB,"P",CR,"C",CR)),
    FOR L:1 THRU LNR DO
      GENTRAN(LITERAL(TAB,EVAL(RHS(RTT[L])), " = ",EVAL(LHS(RTT[L]))),CR)) )$
TITLE2(ST1,I) :=
  ( GENTRAN(LITERAL("C",CR,"C",TAB,EVAL(ST1),CR,"C",CR)), M: 0,
    FOR NN:1 THRU 5 DO (FOR N:1 THRU 15 DO (M:M+1, IF PART(NT[I],N)=1 THEN
      GENTRAN(LITERAL(TAB,EVAL(ST1),EVAL(M)," = ",EVAL(PP[I,M]),CR)))) )$
TITLE3(ST1,I,RRTT) :=
  ( GENTRANOPT: FALSE,
    (FOR N:1 THRU 75 DO (PD:DIFF(PP[I,N],RRTT). IF PD#0 THEN
      GENTRAN(LITERAL(TAB,EVAL(ST1),EVAL(N),EVAL(RRTT)," = ",EVAL(PD),CR))),
    GENTRANOPT: TRUE )$
TITLE4(ST1,RRTT,DRD):=
  GENTRAN(LRSETQ(EVAL(CONCAT(ST1,RRTT)),DRD))$
TITLE5(ST1,I,XDL) :=
  ( MATCHDECLARE([DIFF,A,B],TRUE), TELLSIMP('DIFF(A,B),CONCAT(A,B)),
    GENTRAN(LITERAL("C ",EVAL(XDL),CR)), TITLE3(ST1,I,XDL), KILL(RULES) )$
EXEC1(PIJKP) :=
  IF L=1 THEN
    GENTRAN(LITERAL(TAB,"IF (CND(II,JJ,KK," ,EVAL(PART(EV(PIJKP),3))," ,
      EVAL(PART(EV(PIJKP),1))," ,",EVAL(PART(EV(PIJKP),2)),")) THEN",CR))
  ELSE
    GENTRAN(LITERAL(TAB,"ELSEIF (CND(II,JJ,KK," ,EVAL(PART(EV(PIJKP),3))," ,",
      EVAL(PART(EV(PIJKP),1))," ,",EVAL(PART(EV(PIJKP),2)),")) THEN",CR))$
EXEC2() :=
  ( GENTRANOPT: FALSE, MAXEXPPRINT: 3200 )$
EXEC3(RTT) :=
  IF L=LENGTH(RTT) THEN GENTRAN(LITERAL(TAB,"ENDIF",CR))$
/*-----*/

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/*-----*/
GENTRANOUT("RMDER.FOR")$ /* START WRITING FORTRAN SOURCE OUTPUT */
/*-----*/
/**/TITLET("SUBROUTINE R(J,I,K,JJ,II,KK,DER)","RMDER.FOR","INCLUDE (INTRO)")$
/**/(TITLE1(LENGTH(RTTO),RTTO), TITLE2("PO",O))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"RIP,RIM,RJ,RK,RJP,RKP",CR,"C",CR))$
GENTRANOPT: TRUE$
(GENTRAN(RSETQ(RIP,RIP)), GENTRAN(RSETQ(RIM,RIM)), GENTRAN(RSETQ(RJ ,RJ )),
 GENTRAN(RSETQ(RK ,RK )), GENTRAN(RSETQ(RJP,RJP)), GENTRAN(RSETQ(RKP,RKP)))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"DER",CR))$
(LRIP:O, LRIM:O, LRJ:O, LRK:O, LRJP:O, LRKP:O)$
FOR L:1 THRU LENGTH(RTTO) DO ( PRINT(L), RTTO:RHS(RTTO[L]), LRTTO:LHS(RTTO[L]),
 GENTRAN(LITERAL("C ",EVAL(RRTTO),CR)), EXEC1(LRTTO), TITLE3("PO",O,RRTTO),
 ( IF MEMBER(RRTTO,SRIP) THEN (LRIP:LRIP+1, TITLE4("RIP",RRTTO,DRIP[LRIP])) ),
 ( IF MEMBER(RRTTO,SRIM) THEN (LRIM:LRIM+1, TITLE4("RIM",RRTTO,DRIM[LRIM])) ),
 ( IF MEMBER(RRTTO,SRJ ) THEN (LRJ :LRJ +1, TITLE4("RJ" ,RRTTO,DRJ [LRJ ])) ),
 ( IF MEMBER(RRTTO,SRK ) THEN (LRK :LRK +1, TITLE4("RK" ,RRTTO,DRK [LRK ])) ),
 ( IF MEMBER(RRTTO,SRJP) THEN (LRJP:LRJP+1, TITLE4("RJP",RRTTO,DRJP[LRJP])) ),
 ( IF MEMBER(RRTTO,SRKP) THEN (LRKP:LRKP+1, TITLE4("RKP",RRTTO,DRKP[LRKP])) ),
 EXEC2(), TITLE4("RES",RRTTO,DER [L ] ) ,
 GENTRAN(LITERAL(TAB,"DER = ", "RES",EVAL(RRTTO),CR)), EXEC3(RTTO) )$
/*-----*/ TITLEB()$
/**/TITLET("SUBROUTINE R1(J,I,K,JJ,II,KK,DAN)","RMDER1.FOR","INCLUDE (INTRO)")$
/**/(TITLE1(LENGTH(RTT1),RTT1), TITLE2("PA",1))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R1K,DPU",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R1K,R1K)), GENTRAN(LITERAL(TAB,"DDPU=DPU(J,I)",CR)))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"DER1",CR)), LR1K:O, LDPU:O)$
FOR L:1 THRU LENGTH(RTT1) DO ( PRINT(L), RRTT1:RHS(RTT1[L]), LRTT1:LHS(RTT1[L]),
 GENTRAN(LITERAL("C ",EVAL(RRTT1),CR)), EXEC1(LRTT1), TITLE3("PA",1,RRTT1),
 ( IF MEMBER(RRTT1,SR1K) THEN (LR1K:LR1K+1, TITLE4("R1K" ,RRTT1,DR1K [LR1K])) ),
 ( IF MEMBER(RRTT1,SDPU) THEN (LDPU:LDPU+1, TITLE4("DDPU",RRTT1,DDDP[LDPU])) ),
 EXEC2(), TITLE4("DAN" ,RRTT1,DER1 [L ] ) ,
 GENTRAN(LITERAL(TAB,"DAN = ", "DAN",EVAL(RRTT1),CR)), EXEC3(RTT1) )$
/*-----*/ TITLEB()$
/**/TITLET("SUBROUTINE R2(J,I,K,JJ,II,KK,DAN)","RMDER2.FOR","INCLUDE (INTRO)")$
/**/(TITLE1(LENGTH(RTT2),RTT2), TITLE2("PB",2))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R1KU,DPLO",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R1KU,R1KU)), GENTRAN(LITERAL(TAB,"DDPL=DPLO(J,I)",CR)))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"DER2",CR)), LR1KU:O, LDPL:O)$
FOR L:1 THRU LENGTH(RTT2) DO ( PRINT(L), RRTT2:RHS(RTT2[L]), LRTT2:LHS(RTT2[L]),
 GENTRAN(LITERAL("C ",EVAL(RRTT2),CR)), EXEC1(LRTT2), TITLE3("PB",2,RRTT2),
 (IF MEMBER(RRTT2,SR1KU) THEN (LR1KU:LR1KU+1,TITLE4("R1KU",RRTT2,DR1KU[LR1KU]))),
 (IF MEMBER(RRTT2,SDPLO) THEN (LDPLO:LDPLO+1,TITLE4("DDPL",RRTT2,DDDP[LDPLO]))),
 EXEC2(), TITLE4("DAN" ,RRTT2,DER2 [L ] ) ,
 GENTRAN(LITERAL(TAB,"DAN = ", "DAN",EVAL(RRTT2),CR)), EXEC3(RTT2) )$
/*-----*/ TITLEB()$
/**/TITLET("SUBROUTINE R3(J,I,K,JJ,II,KK,DAN)","RMDER3.FOR","INCLUDE (INTRO)")$
/**/(TITLE1(LENGTH(RTT3),RTT3), TITLE2("PC",3))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R2KW,CIR",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R2KW,R2KW)), GENTRAN(LITERAL(TAB,"CIR=CIRC(J)",CR)))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"DER3",CR)), LR2KW:O, LCIR:O)$
FOR L:1 THRU LENGTH(RTT3) DO ( PRINT(L), RRTT3:RHS(RTT3[L]), LRTT3:LHS(RTT3[L]),
 GENTRAN(LITERAL("C ",EVAL(RRTT3),CR)), EXEC1(LRTT3), TITLE3("PC",3,RRTT3),
 (IF MEMBER(RRTT3,SR2KW) THEN (LR2KW:LR2KW+1,TITLE4("R2KW",RRTT3,DR2KW[LR2KW]))),
 (IF MEMBER(RRTT3,SCIR ) THEN (LCIR :LCIR +1,TITLE4("CIR" ,RRTT3,DCIR [LCIR ])) ),
 EXEC2(), TITLE4("DAN" ,RRTT3,DER3 [L ] ) ,
 GENTRAN(LITERAL(TAB,"DAN = ", "DAN",EVAL(RRTT3),CR)), EXEC3(RTT3) )$
/*-----*/ TITLEB()$
/**/TITLET("SUBROUTINE R4(J,I,K,JJ,II,KK,DAN)","RMDER4.FOR","INCLUDE (INTRO)")$
/**/(TITLE1(LENGTH(RTT4),RTT4), TITLE2("PD",4))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R2KP,CIR",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R2KP,R2KP)), GENTRAN(LITERAL(TAB,"CIR=CIRC(J)",CR)))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"DER4",CR)), LR2KP:O, LCIR:O)$
FOR L:1 THRU LENGTH(RTT4) DO ( PRINT(L), RRTT4:RHS(RTT4[L]), LRTT4:LHS(RTT4[L]),
 GENTRAN(LITERAL("C ",EVAL(RRTT4),CR)), EXEC1(LRTT4), TITLE3("PD",4,RRTT4),
 (IF MEMBER(RRTT4,SR2KP) THEN (LR2KP:LR2KP+1,TITLE4("R2KP",RRTT4,DR2KP[LR2KP]))),
 (IF MEMBER(RRTT4,SCIR ) THEN (LCIR :LCIR +1,TITLE4("CIR" ,RRTT4,DCIR [LCIR ])) ),
 EXEC2(), TITLE4("DAN" ,RRTT4,DER4 [L ] ) ,
 GENTRAN(LITERAL(TAB,"DAN = ", "DAN",EVAL(RRTT4),CR)), EXEC3(RTT4) )$
/*-----*/ TITLEB()$

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/*-----*/
/*              RIGHT HAND SIDES              */
/*-----*/
/*              XD = [XD1 , XD2 , XD3, XD4, XD5]              */
/*-----*/
/*              [MACH, AOAR, T , C , L ]              */
/*-----*/
/*-----*/
/**/TITLET("SUBROUTINE RS(J,I,K,RHSM,RHSA,RHST,RHSC,RHSL)",
           "RMDERS.FOR","INCLUDE (INTROS)")$
/**/(TITLE1(LENGTH(RTTO),RTTO), TITLE2("PO",O))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"RIP,RIM,RJ,RK,RJP,RKP",CR,"C",CR))$
GENTRANOPT: TRUE$
(GENTRAN(RSETQ(RIP,RIP)), GENTRAN(RSETQ(RIM,RIM)), GENTRAN(RSETQ(RJ ,RJ )),
 GENTRAN(RSETQ(RK ,RK )), GENTRAN(RSETQ(RJP,RJP)), GENTRAN(RSETQ(RKP,RKP)))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"DRESIDUAL",CR))$
FOR L:1 THRU LENGTH(SDES1) DO ( PRINT(L), XDL: SDES1[L], TITLE5("PO",O,XDL),
 TITLE4("RIP",XDL,DNRIP[L]), TITLE4("RIM",XDL,DNRIM[L]),
 TITLE4("RJ" ,XDL,DNRJ [L]), TITLE4("RK" ,XDL,DNRK [L]),
 TITLE4("RJP",XDL,DNRJP[L]), TITLE4("RKP",XDL,DNRKP[L]),
 TITLE4("RES",XDL,DRS [L]) )$
/*-----*/
TITLEC("IF (K.EQ.KUP.AND.I.GE.ILE.AND.I.LE.ITE.AND.J.LE.JTPM1) THEN")$
/**/(TITLE1(LENGTH(RTT1),RTT1), TITLE2("PA",1))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R1K,DPU",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R1K,R1K)), GENTRAN(LITERAL(TAB,"DDPU=OPU(J,I)",CR)))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"DANOFI1",CR))$
FOR L:1 THRU LENGTH(SDES1) DO ( PRINT(L), XDL: SDES1[L], TITLE5("PA",1,XDL),
 IF L<=LENGTH(SDES1) THEN TITLE4("R1K" ,XDL,DNR1K[L]),
 TITLE4("DDPU",XDL,DNDPU[L]),
 TITLE4("AN1" ,XDL,DRS1 [L]) )$
GENTRAN( LITERAL("C",CR,TAB,"ENDIF",CR) )$
/*-----*/
TITLEC("IF (K.EQ.KLOW.AND.I.GE.ILE.AND.I.LE.ITE.AND.J.LE.JTPM1) THEN")$
/**/(TITLE1(LENGTH(RTT2),RTT2), TITLE2("PB",2))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R1KU,DPLO",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R1KU,R1KU)), GENTRAN(LITERAL(TAB,"DDPL=DPLO(J,I)",CR)))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"DANOFI2",CR))$
FOR L:1 THRU LENGTH(SDES1) DO ( PRINT(L), XDL: SDES1[L], TITLE5("PB",2,XDL),
 IF L<=LENGTH(SDES1) THEN TITLE4("R1KU",XDL,DNR1KU[L]),
 TITLE4("DDPL",XDL,DNDPLO[L]),
 TITLE4("AN2" ,XDL,DRS2 [L]) )$
GENTRAN( LITERAL("C",CR,TAB,"ENDIF",CR) )$
/*-----*/
TITLEC("IF (K.EQ.KUP.AND.I.GT.ITE.AND.J.LE.JTPM1) THEN")$
/**/(TITLE1(LENGTH(RTT3),RTT3), TITLE2("PC",3))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R2KW,CIR",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R2KW,R2KW)), GENTRAN(LITERAL(TAB,"CIR=CIRC(J)",CR)))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"DANOFI3",CR))$
FOR L:1 THRU LENGTH(SDES1) DO ( PRINT(L), XDL: SDES1[L], TITLE5("PC",3,XDL),
 TITLE4("R2KW",XDL,DNR2KW[L]),
 TITLE4("AN3" ,XDL,DRS3 [L]) )$
GENTRAN( LITERAL("C",CR,TAB,"ENDIF",CR) )$
/*-----*/
TITLEC("IF (K.EQ.KLOW.AND.I.GT.ITE.AND.J.LE.JTPM1) THEN")$
/**/(TITLE1(LENGTH(RTT4),RTT4), TITLE2("PD",4))$

/**/(GENTRAN(LITERAL("C",CR,"C",TAB,"R2KP,CIR",CR,"C",CR)), GENTRANOPT:TRUE)$
(GENTRAN(RSETQ(R2KP,R2KP)), GENTRAN(LITERAL(TAB,"CIR=CIRC(J)",CR)))$

/**/GENTRAN(LITERAL("C",CR,"C",TAB,"DANOFI4",CR))$
FOR L:1 THRU LENGTH(SDES1) DO ( PRINT(L), XDL: SDES1[L], TITLE5("PD",4,XDL),
 TITLE4("R2KP",XDL,DNR2KP[L]),
 TITLE4("AN4" ,XDL,DRS4 [L]) )$
GENTRAN( LITERAL("C",CR,TAB,"ENDIF",CR,"C",CR) )$
/*-----*/
( GENTRAN( LITERAL(TAB,"RHSM = RESXD1 + AN1XD1 + AN2XD1 + AN3XD1 + AN4XD1",CR,
 TAB,"RHSA = RESXD2 + AN1XD2 + AN2XD2 + AN3XD2 + AN4XD2",CR,
 TAB,"RHST = AN1XD3 + AN2XD3",CR,
 TAB,"RHSC = AN1XD4 + AN2XD4",CR,
 TAB,"RHSL = AN1XD5 + AN2XD5",CR) ), TITLEB() )$
/*-----*/

```

```

/*-----*/
/*              WRITE SYMBOLIC PART FOR JACOBIAN              */
/*-----*/
/**/TITLET("SUBROUTINE RE(J,I,K,JJ,II,KK,M)", "RE.FOR","INCLUDE (INTROM)")$

FOR L:1 THRU LENGTH(RTTO) DO ( PRINT(L), RRTTO:RHS(RTTO[L]), LRTTO:LHS(RTTO[L]),
  GENTRAN(LITERAL("C ",EVAL(RRTTO),CR)), EXEC1(LRTTO),
  GENTRAN(LITERAL(TAB,"M = 1",CR)), EXEC3(RTTO) )$
/*-----*/ TITL呢B()$
/**/TITLET("SUBROUTINE R1E(J,I,K,JJ,II,KK,MM)", "R1E.FOR","INCLUDE (INTROM)")$

FOR L:1 THRU LENGTH(RTT1) DO ( PRINT(L), RRTT1:RHS(RTT1[L]), LRTT1:LHS(RTT1[L]),
  GENTRAN(LITERAL("C ",EVAL(RRTT1),CR)), EXEC1(LRTT1),
  GENTRAN(LITERAL(TAB,"MM = 1",CR)), EXEC3(RTT1) )$
/*-----*/ TITL呢B()$
/**/TITLET("SUBROUTINE R2E(J,I,K,JJ,II,KK,MM)", "R2E.FOR","INCLUDE (INTROM)")$

FOR L:1 THRU LENGTH(RTT2) DO ( PRINT(L), RRTT2:RHS(RTT2[L]), LRTT2:LHS(RTT2[L]),
  GENTRAN(LITERAL("C ",EVAL(RRTT2),CR)), EXEC1(LRTT2),
  GENTRAN(LITERAL(TAB,"MM = 1",CR)), EXEC3(RTT2) )$
/*-----*/ TITL呢B()$
/**/TITLET("SUBROUTINE R3E(J,I,K,JJ,II,KK,MM)", "R3E.FOR","INCLUDE (INTROM)")$

FOR L:1 THRU LENGTH(RTT3) DO ( PRINT(L), RRTT3:RHS(RTT3[L]), LRTT3:LHS(RTT3[L]),
  GENTRAN(LITERAL("C ",EVAL(RRTT3),CR)), EXEC1(LRTT3),
  GENTRAN(LITERAL(TAB,"MM = 1",CR)), EXEC3(RTT3) )$
/*-----*/ TITL呢B()$
/**/TITLET("SUBROUTINE R4E(J,I,K,JJ,II,KK,MM)", "R4E.FOR","INCLUDE (INTROM)")$

FOR L:1 THRU LENGTH(RTT4) DO ( PRINT(L), RRTT4:RHS(RTT4[L]), LRTT4:LHS(RTT4[L]),
  GENTRAN(LITERAL("C ",EVAL(RRTT4),CR)), EXEC1(LRTT4),
  GENTRAN(LITERAL(TAB,"MM = 1",CR)), EXEC3(RTT4) )$
/*-----*/ TITL呢B()$

```

APPENDIX C

FORTRAN SOURCE CODE (MACSYMA OUTPUT)

```

1      SUBROUTINE R(J,I,K,JJ,II,KK,DER)
2      RMODR.FOR
3
4      INCLUDE (INTRD)
5
6      C
7      C
8      C
9      C
10     C
11     C
12     C
13     C
14     C
15     C
16     C
17     C
18     C
19     C
20     C
21     C
22     C
23     C
24     C
25     C
26     C
27     C
28     C
29     C
30     C
31     C
32     C
33     C
34     C
35     C
36     C
37     C
38     C
39     C
40     C
41     C
42     C
43     C
44     C
45     C
46     C
47     C
48     C
49     C
50     C
51     C
52     C
53     C
54     C
55     C
56     C
57     C
58     C
59     C
60     C
61     C
62     C
63     C
64     C
65     C
66     C
67     C
68     C
69     C
70     C
71     C
72     C
73     C
74     C
75     C
76     C
77     C
78     C
79     C
80     C
81     C
82     C
83     C
84     C
85     C
86     C
87     C
88     C
89     C
90     C
91     C
92     C
93     C
94     C
95     C
96     C
97     C
98     C
99     C
100    C
101    C
102    C
103    C
104    C
105    C
106    C
107    C
108    C
109    C
110    C
111    C
112    C
113    C
114    C
115    C
116    C
117    C
118    C
119    C
120    C
121    C
122    C
123    C
124    C
125    C
126    C
127    C
128    C
129    C
130    C
131    C

```

P36 = P(J,KM2,IM2)
P37 = P(J,KM2,IM1)
P38 = P(J,KM2,I)
P39 = P(J,KM2,IP1)
P40 = P(JM1,KM1,IM2)
P41 = P(JM1,KM1,IM1)
P42 = P(JM1,KM1,I)
P43 = P(JM1,KM1,IP1)
P44 = P(J,KM1,IM2)
P45 = P(J,KM1,IM1)
P46 = P(J,KM1,I)
P47 = P(J,KM1,IP1)
P48 = P(JP1,KM1,IM2)
P49 = P(JP1,KM1,IM1)
P50 = P(JP1,KM1,I)
P51 = P(JP1,KM1,IP1)
P52 = P(JM2,K,IM2)
P53 = P(JM2,K,IM1)
P54 = P(JM2,K,I)
P55 = P(JM2,K,IP1)
P56 = P(JM1,K,IM2)
P57 = P(JM1,K,IM1)
P58 = P(JM1,K,I)
P59 = P(JM1,K,IP1)
P60 = P(J,K,IM2)
P61 = P(J,K,IM1)
P62 = P(J,K,I)
P63 = P(J,K,IP1)
P64 = P(JP1,K,IM2)
P65 = P(JP1,K,IM1)
P66 = P(JP1,K,I)
P67 = P(JP1,K,IP1)
P68 = P(JP2,K,IM2)
P69 = P(JP2,K,IM1)
P70 = P(JP2,K,I)
P71 = P(JP2,K,IP1)
P72 = P(JM1,KP1,IM2)
P73 = P(JM1,KP1,IM1)
P74 = P(JM1,KP1,I)
P75 = P(JM1,KP1,IP1)
P76 = P(J,KP1,IM2)
P77 = P(J,KP1,IM1)
P78 = P(J,KP1,I)
P79 = P(J,KP1,IP1)
P80 = P(JP1,KP1,IM2)
P81 = P(JP1,KP1,IM1)
P82 = P(JP1,KP1,I)
P83 = P(JP1,KP1,IP1)
P84 = P(J,KP2,IM2)
P85 = P(J,KP2,IM1)
P86 = P(J,KP2,I)
P87 = P(J,KP2,IP1)

PD
P01 = DXII(I) = (P68+P69+P70+P71)/2.0
P02 = DXII(IM1) = (P67+P68+P69+P70)/2.0
P03 = DXII(IM2) = (P66+P67+P68+P69)/2.0
P04 = DXII(I) = (P63+P64+P65+P66)/2.0
P05 = DXII(IM1) = (P62+P63+P64+P65)/2.0
P06 = DXII(IM2) = (P61+P62+P63+P64)/2.0
P07 = DXII(I) = (P59+P60+P61+P62)/2.0
P08 = DXII(IM1) = (P58+P59+P60+P61)/2.0
P09 = DXII(IM2) = (P57+P58+P59+P60)/2.0
P10 = DXII(I) = (P53+P54+P55+P56)/2.0
P11 = DXII(IM1) = (P52+P53+P54+P55)/2.0
P12 = DXII(IM2) = (P51+P52+P53+P54)/2.0
P13 = DXII(I) = (P113+P114+P115+P116)/2.0
P14 = DXII(IM1) = (P112+P113+P114+P115)/2.0
P15 = DXII(IM2) = (P111+P112+P113+P114)/2.0
P16 = XIYIP(J,I) = OXINF*S/XIXIP(J,I) + (AJ2(J) = (P84+P85+P86+P87) + AJ1
(J) = (P89+P90+P91+P92))/2.0
P17 = XIYIP(J,IM1) = OXINF*S/XIXIP(J,IM1) + (AJ2(J) = (P93+P94+P95+P96) + AJ1
(J) = (P98+P99+P100+P101))/2.0
P18 = XIYIP(J,IM2) = OXINF*S/XIXIP(J,IM2) + (AJ2(J) = (P102+P103+P104+P105) + AJ1
(J) = (P107+P108+P109+P110))/2.0
P19 = XIYIP(JM1,I) = OXINF*S/XIXIP(JM1,I) + (AJ2(JM1) = (P89+P90+P91+P92) + AJ1
(JM1) = (P93+P94+P95+P96))/2.0
P20 = XIYIP(JM1,IM1) = OXINF*S/XIXIP(JM1,IM1) + (AJ2(JM1) = (P98+P99+P100+P101) + AJ1
(JM1,IM1) = (P102+P103+P104+P105))/2.0
P21 = XIYIP(JM1,IM2) = OXINF*S/XIXIP(JM1,IM2) + (AJ2(JM1) = (P107+P108+P109+P110) + AJ1
(JM1,IM2) = (P112+P113+P114+P115))/2.0
P22 = XIYIP(J,I) = OXINF*S/XIXIP(J,I) + (AJ2(J) = (P89+P90+P91+P92) + AJ1
(J) = (P93+P94+P95+P96))/2.0
P23 = XIYIP(J,IM1) = OXINF*S/XIXIP(J,IM1) + (AJ2(J) = (P98+P99+P100+P101) + AJ1
(J) = (P102+P103+P104+P105))/2.0
P24 = XIYIP(J,IM2) = OXINF*S/XIXIP(J,IM2) + (AJ2(J) = (P107+P108+P109+P110) + AJ1
(J) = (P112+P113+P114+P115))/2.0
P25 = XIYIP(JP1,I) = OXINF*S/XIXIP(JP1,I) + (AJ2(JP1) = (P99+P100+P101+P102) + AJ1
(JP1) = (P103+P104+P105+P106))/2.0
P26 = XIYIP(JP1,IM1) = OXINF*S/XIXIP(JP1,IM1) + (AJ2(JP1) = (P108+P109+P110+P111) + AJ1
(JP1,IM1) = (P112+P113+P114+P115))/2.0
P27 = XIYIP(JP1,IM2) = OXINF*S/XIXIP(JP1,IM2) + (AJ2(JP1) = (P117+P118+P119+P120) + AJ1
(JP1,IM2) = (P121+P122+P123+P124))/2.0
P28 = XIYIP(J,I) = OXINF*S/XIXIP(J,I) + (AJ2(J) = (P119+P120+P121+P122) + AJ1
(J) = (P123+P124+P125+P126))/2.0
P29 = XIYIP(J,IM1) = OXINF*S/XIXIP(J,IM1) + (AJ2(J) = (P128+P129+P130+P131) + AJ1
(J) = (P132+P133+P134+P135))/2.0
P30 = XIYIP(J,IM2) = OXINF*S/XIXIP(J,IM2) + (AJ2(J) = (P137+P138+P139+P140) + AJ1
(J) = (P141+P142+P143+P144))/2.0
P31 = OZINF*(A1K(K) = (P89+P90+P91+P92) + A2K(K) = (-P89+P90+P114+P115) + A2K(K) = (-P89+P90+P114+P115))/2.0
P32 = OZINF*(A1K(K) = (P88+P89+P90+P91) + A2K(K) = (-P88+P89+P113+P114) + A2K(K) = (-P88+P89+P113+P114))/2.0
P33 = OZINF*(A1K(K) = (P87+P88+P89+P90) + A2K(K) = (-P87+P88+P112+P113) + A2K(K) = (-P87+P88+P112+P113))/2.0
P34 = OZINF*(A1K(K) = (P84+P85+P86+P87) + A2K(K) = (-P84+P85+P109+P110) + A2K(K) = (-P84+P85+P109+P110))/2.0
P35 = OZINF*(A1K(K) = (P83+P84+P85+P86) + A2K(K) = (-P83+P84+P108+P109) + A2K(K) = (-P83+P84+P108+P109))/2.0
P36 = OZINF*(A1K(K) = (P82+P83+P84+P85) + A2K(K) = (-P82+P83+P107+P108) + A2K(K) = (-P82+P83+P107+P108))/2.0
P37 = OZINF*(A2K(KM1) = (P89+P90+P91+P92) + A1K(KM1) = (P84+P85+P93+P94) + A1K(KM1) = (P84+P85+P93+P94))/2.0
P38 = OZINF*(A2K(KM1) = (P88+P89+P90+P91) + A1K(KM1) = (P83+P84+P92+P93) + A1K(KM1) = (P83+P84+P92+P93))/2.0
P39 = OZINF*(A2K(KM1) = (P87+P88+P89+P90) + A1K(KM1) = (P82+P83+P91+P92) + A1K(KM1) = (P82+P83+P91+P92))/2.0
P40 = OZINF*(A1K(K) = (P84+P85+P86+P87) + A2K(K) = (-P84+P85+P119+P120) + A2K(K) = (-P84+P85+P119+P120))/2.0
P41 = OZINF*(A1K(K) = (P83+P84+P85+P86) + A2K(K) = (-P83+P84+P118+P119) + A2K(K) = (-P83+P84+P118+P119))/2.0
P42 = OZINF*(A1K(K) = (P82+P83+P84+P85) + A2K(K) = (-P82+P83+P117+P118) + A2K(K) = (-P82+P83+P117+P118))/2.0

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32. P043 = QZINF+{A1K(KP1)}=[P89-P88-P114+P113]+A2K(KP1)+{P129+P138-
33. P114-P113}}/2.0
34. P044 = QZINF+{A1K(KP1)}=[P88-P87-P113+P112]+A2K(KP1)+{P138+P137-
35. P113-P112}}/2.0
36. P045 = QZINF+{A1K(KP1)}=[P87-P86-P112+P111]+A2K(KP1)+{P137+P136-
37. P112-P111}}/2.0
38. P046 = A1R(J,I)={DXII(I)}={P88+S+P89}+OXINF/XIXIP(J,I)+XIYIP(J,I)
39. ={XIYIP(J,I)+OXINF+S/XIXIP(J,I)+{AJ2(J)}={P94+P93-P89-P88}+AJ1(J)}
40. ={P89+P88-P84-P83}}/2.0
41. P047 = A1R(J,IM1)={DXII(IM1)}={P87+S+P88}+OXINF/XIXIP(J,IM1)+
42. XIYIP(J,IM1)={XIYIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+{AJ2(J)}={P93+P92-
43. P88-P87}+AJ1(J)}={P88+P87-P83-P82}}/2.0
44. P048 = A1R(J,IM2)={DXII(IM2)}={P88+S+P87}+OXINF/XIXIP(J,IM2)+
45. XIYIP(J,IM2)={XIYIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+{AJ2(J)}={P92+P91-
46. P87-P86}+AJ1(J)}={P87+P86-P82-P81}}/2.0
47. P049 = A1R(JM1,I)={DXII(I)}={P83+S+P84}+OXINF/XIXIP(JM1,I)+XIYIP(
48. JM1,I)={XIYIP(JM1,I)+OXINF+S/XIXIP(JM1,I)+{AJ2(JM1)}={P89+P88-P84-
49. P83}+AJ1(JM1)}={P84+P83-P79-P78}}/2.0
50. P050 = A1R(JM1,IM1)={DXII(IM1)}={P82+S+P83}+OXINF/XIXIP(JM1,IM1)+
51. XIYIP(JM1,IM1)={XIYIP(JM1,IM1)+OXINF+S/XIXIP(JM1,IM1)+{AJ2(JM1)}={
52. P88+P87-P83-P82}+AJ1(JM1)}={P83+P82-P78-P77}}/2.0
53. P051 = A1R(JM1,IM2)={DXII(IM2)}={P81+S+P82}+OXINF/XIXIP(JM1,IM2)+
54. XIYIP(JM1,IM2)={XIYIP(JM1,IM2)+OXINF+S/XIXIP(JM1,IM2)+{AJ2(JM1)}={
55. P87+P86-P82-P81}+AJ1(JM1)}={P82+P81-P77-P76}}/2.0
56. P052 = A1R(J,I)={DXII(I)}={P83+S+P84}+OXINF/XIXIP(J,I)+XIYIP(J,I)
57. ={XIYIP(J,I)+OXINF+S/XIXIP(J,I)+{AJ2(J)}={P89+P88-P84-P83}+AJ1(J)}
58. ={P84+P83-P79-P78}}/2.0
59. P053 = A1R(J,IM1)={DXII(IM1)}={P82+S+P83}+OXINF/XIXIP(J,IM1)+
60. XIYIP(J,IM1)={XIYIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+{AJ2(J)}={P88+P87-
61. P83-P82}+AJ1(J)}={P83+P82-P78-P77}}/2.0
62. P054 = A1R(J,IM2)={DXII(IM2)}={P81+S+P82}+OXINF/XIXIP(J,IM2)+
63. XIYIP(J,IM2)={XIYIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+{AJ2(J)}={P87+P86-
64. P82-P81}+AJ1(J)}={P82+P81-P77-P76}}/2.0
65. P055 = A1R(JP1,I)={DXII(I)}={P93+S+P94}+OXINF/XIXIP(JP1,I)+XIYIP(
66. JP1,I)={XIYIP(JP1,I)+OXINF+S/XIXIP(JP1,I)+{AJ2(JP1)}={P99+P98-P94-
67. P93}+AJ1(JP1)}={P94+P93-P89-P88}}/2.0
68. P056 = A1R(JP1,IM1)={DXII(IM1)}={P92+S+P93}+OXINF/XIXIP(JP1,IM1)+
69. XIYIP(JP1,IM1)={XIYIP(JP1,IM1)+OXINF+S/XIXIP(JP1,IM1)+{AJ2(JP1)}={
70. P98+P97-P93-P92}+AJ1(JP1)}={P93+P92-P88-P87}}/2.0
71. P057 = A1R(JP1,IM2)={DXII(IM2)}={P91+S+P92}+OXINF/XIXIP(JP1,IM2)+
72. XIYIP(JP1,IM2)={XIYIP(JP1,IM2)+OXINF+S/XIXIP(JP1,IM2)+{AJ2(JP1)}={
73. P97+P96-P92-P91}+AJ1(JP1)}={P92+P91-P87-P86}}/2.0
74. P058 = A1R(J,I)={DXII(I)}={P113+S+P114}+OXINF/XIXIP(J,I)+XIYIP(J,
75. I)={XIYIP(J,I)+OXINF+S/XIXIP(J,I)+{AJ2(J)}={P119+P118-P114-P113}+
76. AJ1(J)}={P114+P113-P109-P108}}/2.0
77. P059 = A1R(J,IM1)={DXII(IM1)}={P112+S+P113}+OXINF/XIXIP(J,IM1)+
78. XIYIP(J,IM1)={XIYIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+{AJ2(J)}={P118+
79. P117-P113-P112}+AJ1(J)}={P113+P112-P108-P107}}/2.0
80. P060 = A1R(J,IM2)={DXII(IM2)}={P111+S+P112}+OXINF/XIXIP(J,IM2)+
81. XIYIP(J,IM2)={XIYIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+{AJ2(J)}={P117+
82. P116-P112-P111}+AJ1(J)}={P112+P111-P107-P106}}/2.0
83. P061 = XIYIP(J,I)={DXII(I)}={P89+S+P88}+OXINF/XIXIP(J,I)+XIYIP(J,I)
84. =OXINF+S/XIXIP(J,I)+{AJ2(J)}={P94+P93-P89-P88}+AJ1(J)}={P89+P88-
85. P84-P83}}/2.0
86. P062 = XIYIP(J,IM1)={DXII(IM1)}={P87+S+P88}+OXINF/XIXIP(J,IM1)+
87. XIYIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+{AJ2(J)}={P93+P92-P88-P87}+AJ1(J)
88. ={P88+P87-P83-P82}}/2.0
89. P063 = XIYIP(J,IM2)={DXII(IM2)}={P86+S+P87}+OXINF/XIXIP(J,IM2)+
90. XIYIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+{AJ2(J)}={P92+P91-P87-P86}+AJ1(J)
91. ={P87+P86-P82-P81}}/2.0
92. P064 = XIYIP(JM1,I)={DXII(I)}={P83+S+P84}+OXINF/XIXIP(JM1,I)+XIYIP(
93. JM1,I)={OXINF+S/XIXIP(JM1,I)+{AJ2(JM1)}={P89+P88-P84-P83}+AJ1(JM1)
94. ={P84+P83-P79-P78}}/2.0
95. P065 = XIYIP(JM1,IM1)={DXII(IM1)}={P82+S+P83}+OXINF/XIXIP(JM1,IM1)+
96. XIYIP(JM1,IM1)+OXINF+S/XIXIP(JM1,IM1)+{AJ2(JM1)}={P88+P87-P83-P82}
97. +AJ1(JM1)}={P83+P82-P78-P77}}/2.0
98. P066 = XIYIP(JM1,IM2)={DXII(IM2)}={P81+S+P82}+OXINF/XIXIP(JM1,IM2)+
99. XIYIP(JM1,IM2)+OXINF+S/XIXIP(JM1,IM2)+{AJ2(JM1)}={P87+P86-P82-P81}
00. +AJ1(JM1)}={P82+P81-P77-P76}}/2.0
01. P067 = XIYIP(J,I)={DXII(I)}={P83+S+P84}+OXINF/XIXIP(J,I)+XIYIP(J,I)
02. =OXINF+S/XIXIP(J,I)+{AJ2(J)}={P89+P88-P84-P83}+AJ1(J)}={P84+P83-
03. P89-P88}}/2.0
04. P068 = XIYIP(J,IM1)={DXII(IM1)}={P82+S+P83}+OXINF/XIXIP(J,IM1)+
05. XIYIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+{AJ2(J)}={P88+P87-P83-P82}+AJ1(J)
06. ={P83+P82-P78-P77}}/2.0
07. P069 = XIYIP(J,IM2)={DXII(IM2)}={P81+S+P82}+OXINF/XIXIP(J,IM2)+
08. XIYIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+{AJ2(J)}={P87+P86-P82-P81}+AJ1(J)
09. ={P82+P81-P77-P76}}/2.0
10. P070 = XIYIP(JP1,I)={DXII(I)}={P93+S+P94}+OXINF/XIXIP(JP1,I)+XIYIP(
11. JP1,I)={OXINF+S/XIXIP(JP1,I)+{AJ2(JP1)}={P99+P98-P94-P93}+AJ1(JP1)
12. ={P94+P93-P89-P88}}/2.0
13. P071 = XIYIP(JP1,IM1)={DXII(IM1)}={P92+S+P93}+OXINF/XIXIP(JP1,IM1)+
14. XIYIP(JP1,IM1)+OXINF+S/XIXIP(JP1,IM1)+{AJ2(JP1)}={P98+P97-P93-P92}
15. +AJ1(JP1)}={P93+P92-P88-P87}}/2.0
16. P072 = XIYIP(JP1,IM2)={DXII(IM2)}={P91+S+P92}+OXINF/XIXIP(JP1,IM2)+
17. XIYIP(JP1,IM2)+OXINF+S/XIXIP(JP1,IM2)+{AJ2(JP1)}={P97+P96-P92-P91}
18. +AJ1(JP1)}={P92+P91-P87-P86}}/2.0
19. P073 = XIYIP(J,I)={DXII(I)}={P113+S+P114}+OXINF/XIXIP(J,I)+XIYIP(J,
20. I)={OXINF+S/XIXIP(J,I)+{AJ2(J)}={P119+P118-P114-P113}+AJ1(J)}={P114
21. +P113-P109-P108}}/2.0
22. P074 = XIYIP(J,IM1)={DXII(IM1)}={P112+S+P113}+OXINF/XIXIP(J,IM1)+
23. XIYIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+{AJ2(J)}={P118+P117-P113-P112}+
24. AJ1(J)}={P113+P112-P108-P107}}/2.0
25. P075 = XIYIP(J,IM2)={DXII(IM2)}={P111+S+P112}+OXINF/XIXIP(J,IM2)+
26. XIYIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+{AJ2(J)}={P117+P116-P112-P111}+
27. AJ1(J)}={P112+P111-P107-P106}}/2.0

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RIP,RIM,RJ, RK, RJP, RKP

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31. TO={G1={P017+P082+P02+P047+P032==2)+1}}==G2
32. RIP+SG(I,J,K)={TO+S+{G1={P018+P081+P01+P048+P031==2)+1}}==G2)+TO
33. TO={G1={P018+P083+P03+P048+P033==2)+1}}==G2
34. RIM+SG(IM1,J,K)={TO+S+{G1={P017+P082+P02+P047+P032==2)+1}}==G2)+TO
35. TO={G1={P017+P082+P02+P047+P032==2)+1}}==G2
36. T1={G1={P018+P083+P03+P048+P033==2)+1}}==G2
37. T2={G1={P020+P085+P05+P050+P035==2)+1}}==G2
38. T3={G1={P021+P088+P06+P08+P036==2)+1}}==G2
39. RJ={SG(IM1,JM1,K)={T3+S+T2}+SG(I,JM1,K)={T2+S+{G1={P019+P084+P04+
40. P049+P034==2)+1}}==G2}+SG(IM1,J,K)={T1+S+TO}+SG(I,J,K)={TO+S+{G1={
41. P018+P081+P01+P048+P031==2)+1}}==G2}+T3+T2+T1+TO)/4.0
42. TO={G1={P017+P082+P02+P047+P032==2)+1}}==G2
43. T1={G1={P018+P083+P03+P048+P033==2)+1}}==G2
44. T2={G1={P053+P08+P023+P088+P038==2)+1}}==G2
45. T3={G1={P054+P09+P024+P089+P039==2)+1}}==G2
46. RK={SG(IM1,J,KM1)={T3+S+T2}+SG(I,J,KM1)={T2+S+{G1={P052+P07+P022+
47. P087+P037==2)+1}}==G2}+SG(IM1,J,K)={T1+S+TO}+SG(I,J,K)={TO+S+{G1={
48. P018+P081+P01+P048+P031==2)+1}}==G2}+T3+T2+T1+TO)/4.0
49. TO={G1={P017+P082+P02+P047+P032==2)+1}}==G2
50. T1={G1={P018+P083+P03+P048+P033==2)+1}}==G2
51. T2={G1={P028+P071+P011+P056+P041==2)+1}}==G2
52. T3={G1={P027+P072+P012+P057+P042==2)+1}}==G2
53. RJP={SG(IM1,JP1,K)={T3+S+T2}+SG(I,JP1,K)={T2+S+{G1={P025+P070+P010
54. +P055+P040==2)+1}}==G2}+SG(IM1,J,K)={T1+S+TO}+SG(I,J,K)={TO+S+{G1={
55. P018+P081+P01+P048+P031==2)+1}}==G2}+T3+T2+T1+TO)/4.0
56. TO={G1={P017+P082+P02+P047+P032==2)+1}}==G2
57. T1={G1={P018+P083+P03+P048+P033==2)+1}}==G2
58. T2={G1={P029+P074+P014+P059+P044==2)+1}}==G2
59. T3={G1={P030+P075+P015+P060+P045==2)+1}}==G2
60. RKP={SG(IM1,J,KP1)={T3+S+T2}+SG(I,J,KP1)={T2+S+{G1={P028+P073+P013
61. +P068+P043==2)+1}}==G2}+SG(IM1,J,K)={T1+S+TO}+SG(I,J,K)={TO+S+{G1={
62. P018+P081+P01+P048+P031==2)+1}}==G2}+T3+T2+T1+TO)/4.0
63.

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264. C
265. DER
266. C P36
267. IF (CND(I1,JJ,KK,IM2,J,KM2)) THEN
268. P039P36 = -(1.0/2.0*A1K(KM1))
269. TO:G1=(P054+P09+P024+P069+P039**2)+1)**(G2-1)
270. RKP36=(2*G1+G2+SG(IM1,J,KM1)+P039+P039P36+TO+S+2*G1+G2+P039+
271. P039P36+TO)/4.0
272. RESP36=((P68-P63)*RKP36+TA33M+2*XIXXI(J,I)*OZINF+RKP36/DZETAC(K))
273. V2
274. DER = RESP36
275. C P37
276. ELSEIF (CND(I1,JJ,KK,IM1,J,KM2)) THEN
277. P038P37 = -(1.0/2.0*A1K(KM1))
278. P039P37 = -(1.0/2.0*A1K(KM1))
279. TO:G2-1
280. T1=(G1=(P053+P08+P023+P068+P038**2)+1)**TO
281. T2=2*G1+G2+P038+P038P37+T1
282. T3=(G1=(P054+P09+P024+P069+P039**2)+1)**TO
283. RKP37=(SG(IM1,J,KM1)+[2*G1+G2+P039+P039P37+T3+S+T2]+2*G1+G2+SG(I,J
284. ,KM1)+P038+P038P37+T1+S+2*G1+G2+P039+P039P37+T3+T2)/4.0
285. RESP37=((P68-P63)*RKP37+TA33M+2*XIXXI(J,I)*OZINF+RKP37/DZETAC(K))
286. V2
287. DER = RESP37
288. C P38
289. ELSEIF (CND(I1,JJ,KK,I,J,KM2)) THEN
290. P037P38 = -(1.0/2.0*A1K(KM1))
291. P038P38 = -(1.0/2.0*A1K(KM1))
292. TO:G2-1
293. T1=(G1=(P053+P08+P023+P068+P038**2)+1)**TO
294. RKP38=(SG(I,J,KM1)+[2*G1+G2+P038+P038P38+T1+S+2*G1+G2+P037+P037P38
295. +G1=(P052+P07+P022+P067+P037**2)+1)**TO]+2*G1+G2+SG(IM1,J,KM1))+
296. P038+P038P38+T1+2*G1+G2+P038+P038P38+T1)/4.0
297. RESP38=((P68-P63)*RKP38+TA33M+2*XIXXI(J,I)*OZINF+RKP38/DZETAC(K))
298. V2
299. DER = RESP38
300. C P39
301. ELSEIF (CND(I1,JJ,KK,IP1,J,KM2)) THEN
302. P037P39 = -(1.0/2.0*A1K(KM1))
303. RKP39=G1+G2+SG(I,J,KM1)+P037+P037P39+[G1=(P052+P07+P022+P067+P037
304. **2)+1)**(G2-1)]/2.0
305. RESP39=((P68-P63)*RKP39+TA33M+2*XIXXI(J,I)*OZINF+RKP39/DZETAC(K))
306. V2
307. DER = RESP39
308. C P56
309. ELSEIF (CND(I1,JJ,KK,IM2,JM1,KM1)) THEN
310. P024P56 = -(1.0/2.0*AJ1(J))
311. P036P56 = -(1.0/2.0*A1K(K))
312. P054P56 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM2))
313. P059P56 = -(1.0/2.0*AJ1(J))
314. TO:G1=(P021+P066+P051+P06+P036**2)+1)**(G2-1)
315. RJP56=[2*G1+G2+SG(IM1,JM1,K)+P036+P036P56+TO+S+2*G1+G2+P036+
316. P036P56+TO]/4.0
317. TO: P054P56+P09+P024+P069P56+P024P56+P069
318. T1=(G1=(P054+P09+P024+P069+P039**2)+1)**(G2-1)
319. AKP56=[G1+G2+SG(IM1,J,KM1)+TO+T1+S+G1+G2+TO+T1]/4.0
320. RESP56=((P68-P63)*RKP56+TA33M+2*XIXXI(J,I)*OZINF+RKP56/DZETAC(K))
321. V2+S=(RJP56+TA21M+[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=TA11]
322. +[(P68-P63)=RJP56+TA22M])
323. DER = RESP56
324. C P57
325. ELSEIF (CND(I1,JJ,KK,IM1,JM1,KM1)) THEN
326. P023P57 = -(1.0/2.0*AJ1(J))
327. P024P57 = -(1.0/2.0*AJ1(J))
328. P036P57 = -(1.0/2.0*A1K(K))
329. P038P57 = -(1.0/2.0*A1K(K))
330. P053P57 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
331. P064P57 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM2))
332. P068P57 = -(1.0/2.0*AJ1(J))
333. P069P57 = -(1.0/2.0*AJ1(J))
334. TO:G2-1
335. T1=(G1=(P020+P065+P05+P050+P035**2)+1)**TO
336. T2=2*G1+G2+P035+P035P57+T1
337. T3=(G1=(P021+P066+P051+P06+P036**2)+1)**TO
338. RJP57=(SG(IM1,JM1,K)+[2*G1+G2+P036+P036P57+T3+S+T2]+2*G1+G2+SG(I,
339. JM1,K)+P035+P035P57+T1+S+2*G1+G2+P036+P036P57+T3+T2)/4.0
340. TO: P053P57+P06+P023+P068P57+P023P57+P068
341. T1+G2-1
342. T2=(G1=(P053+P06+P023+P068+P038**2)+1)**T1
343. T3+G1+G2+TO+T2
344. T4+P054P57+P09+P024+P069P57+P024P57+P069
345. T5=(G1=(P054+P09+P024+P069+P039**2)+1)**T1
346. RKP57=(SG(IM1,J,KM1)+[G1+G2+T4+T5+S+T3]+G1+G2+SG(I,J,KM1)+TO+T2+S+
347. G1+G2+T4+T5+T3)/4.0
348. RESP57=((P68-P63)*RKP57+TA33M+2*XIXXI(J,I)*OZINF+RKP57/DZETAC(K))
349. V2+S=(RJP57+TA21M+[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=TA11]
350. +[(P68-P63)=RJP57+TA22M])
351. DER = RESP57
352. C P58
353. ELSEIF (CND(I1,JJ,KK,I,JM1,KM1)) THEN
354. P022P58 = -(1.0/2.0*AJ1(J))
355. P023P58 = -(1.0/2.0*AJ1(J))
356. P034P58 = -(1.0/2.0*A1K(K))
357. P035P58 = -(1.0/2.0*A1K(K))
358. P052P58 = -(1.0/2.0*AJ1(J)*XIYIP(J,I))
359. P053P58 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
360. P067P58 = -(1.0/2.0*AJ1(J))
361. P068P58 = -(1.0/2.0*AJ1(J))
362. TO:G2-1
363. T1=(G1=(P020+P065+P05+P050+P035**2)+1)**TO
364. RJP58=(SG(I,JM1,K)+[2*G1+G2+P035+P035P58+T1+S+2*G1+G2+P034+P034P58
365. +G1=(P019+P064+P04+P049+P034**2)+1)**TO]+2*G1+G2+SG(IM1,JM1,K))+
366. P035+P035P58+T1+2*G1+G2+P035+P035P58+T1)/4.0
367. TO: P053P58+P06+P023+P068P58+P023P58+P068
368. T1+G2-1
369. T2=(G1=(P053+P06+P023+P068+P038**2)+1)**T1
370. RKP58=(SG(I,J,KM1)+[G1+G2+TO+T2+S+G1+G2+(P052P58+P07+P022+P067P58+
371. P022P58+P067)+G1=(P052+P07+P022+P067+P037**2)+1)**T1]+G1+G2+SG(
372. IM1,J,KM1)+TO+T2+G1+G2+TO+T2)/4.0
373. RESP58=((P68-P63)*RKP58+TA33M+2*XIXXI(J,I)*OZINF+RKP58/DZETAC(K))
374. V2+S=(RJP58+TA21M+[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=TA11]
375. +[(P68-P63)=RJP58+TA22M])
376. DER = RESP58
377. C P59
378. ELSEIF (CND(I1,JJ,KK,IP1,JM1,KM1)) THEN
379. P022P59 = -(1.0/2.0*AJ1(J))
380. P034P59 = -(1.0/2.0*A1K(K))
381. P052P59 = -(1.0/2.0*AJ1(J)*XIYIP(J,I))
382. P067P59 = -(1.0/2.0*AJ1(J))
383. RJP59=(G1+G2+SG(I,JM1,K)+P034+P034P59+[G1=(P019+P064+P04+P049+P034
384. **2)+1)**(G2-1)]/2.0
385. AKP59=[G1+G2+SG(I,J,KM1)+[(P052P59+P07+P022+P067P59+P022P59+P067)+
386. G1=(P052+P07+P022+P067+P037**2)+1)**(G2-1)]/4.0
387. RESP59=((P68-P63)*RKP59+TA33M+2*XIXXI(J,I)*OZINF+RKP59/DZETAC(K))
388. V2+S=(RJP59+TA21M+[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=TA11]
389. +[(P68-P63)=RJP59+TA22M])
390. DER = RESP59
391. C P61
392. ELSEIF (CND(I1,JJ,KK,IM2,J,KM1)) THEN
393. P08P61 = OX1(IM2)=S
394. P024P61 = [-AJ2(J)+AJ1(J)]/2.0
395. P033P61 = -(1.0/2.0*A1K(K))
396. P039P61 = [-AZK(KM1)+A1K(KM1)]/2.0

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395. P054P61 = DXII[IM2]*A11R(J,IM2)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/
396. 2.0
397. P069P61 = DXII[IM2]*XIYIP(J,IM2)*S+(-AJ2(J)+AJ1(J))/2.0
398. TO=[G1*(P018+P063+P03=P048+P033**2)+1]**=(G2-1)
399. RIMP61=(2+G1+G2+SG[IM1,J,K])=P033+P033P61*TO*5+2+G1+G2+P033+P033P61*
400. TO
401. TO=[G1*(P018+P063+P03=P048+P033**2)+1]**=(G2-1)
402. RJP61=[2+G1+G2+SG[IM1,J,K])=P033+P033P61*TO*5+2+G1+G2+P033+P033P61*
403. TO/4.0
404. TO*G2-1
405. T1=[G1*(P018+P063+P03=P048+P033**2)+1]**=TO
406. T2=[G1*(P054+P09+P024=P088+P039**2)+1]**=TO
407. T3=P054+P09P61+P054P61+P09+P024=P088P61+P024P61+P088+2*P039+
408. P039P61
409. RKP61=[G1+G2+SG[IM1,J,KM1]*T2+T3*5+2+G1+G2+SG[IM1,J,K)=P033+
410. P033P61+T1*5+G1+G2+T2+T3+2+G1+G2+P033+P033P61+T1]/4.0
411. TO=[G1*(P018+P063+P03=P048+P033**2)+1]**=(G2-1)
412. RJP61=[2+G1+G2+SG[IM1,J,K)=P033+P033P61*TO*5+2+G1+G2+P033+P033P61
413. *TO]/4.0
414. TO=[G1*(P018+P063+P03=P048+P033**2)+1]**=(G2-1)
415. RKP61=[2+G1+G2+SG[IM1,J,K)=P033+P033P61*TO*5+2+G1+G2+P033+P033P61
416. *TO]/4.0
417. RESP61=[(P88-P83)=RKP61+TA33M+2*XIXI(J,I)=OXINF=RKP61/DZETAC(K)]=
418. V2+[(P88+P113)=RKP61+TA33P+2*XIXI(J,I)=OXINF=RKP61/DZETAC(K)]=
419. V1+5*[RIMP61+TA12M+[(P83+P82-P88-P87)=TAJ2+(P88+P87-P83-P82)=
420. TAJ1]+(P88-P87)=RIMP61+TA11M+2*OXINF=RIMP61/DXIC(I)]=S*(RJP61+
421. TA21M+[(P88-P88+P84-P83)=TAI2+(P88-P87+P83-P82)=TAI1]+(P88-P83)=
422. RJP61+TA22M)+RJP61+TA21P+[(P84-P83+P89-P88)=TAI2+(P83-P82+P88-
423. P87)=TAI1]+(P83-P88)=RJP61+TA22P
424. DER = RESP61
425.
426. C P82
427. ELSEIF [CND(I1,JJ,KK,IM1,J,KM1)] THEN
428. P08P62 = DXII[IM1]*S
429. P09P62 = DXII[IM2]
430. P023P62 = [-AJ2(J)+AJ1(J)]/2.0
431. P024P62 = [-AJ2(J)+AJ1(J)]/2.0
432. P032P62 = -(1.0/2.0*A1K(K))
433. P033P62 = -(1.0/2.0*A1K(K))
434. P036P62 = [-A2K(KM1)+A1K(KM1)]/2.0
435. P037P62 = [-A2K(KM1)+A1K(KM1)]/2.0
436. P053P62 = DXII[IM1]*A11R(J,IM1)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/
437. 2.0
438. P054P62 = [-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/2.0+DXII[IM2]*A11R(J,IM2)
439. P068P62 = DXII[IM1]*XIYIP(J,IM1)*S+(-AJ2(J)+AJ1(J))/2.0
440. P069P62 = DXII[IM2]*XIYIP(J,IM2)+(-AJ2(J)+AJ1(J))/2.0
441. TO=[G1*(P017+P062+P02=P047+P032**2)+1]**=(G2-1)
442. RIPP62=(2+G1+G2+SG[I,J,K)=P032+P032P62*TO*5+2+G1+G2+P032+P032P62*TO
443. TO*G2-1
444. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
445. RIMP62=SG[IM1,J,K)=(2+G1+G2+P032+P032P62+T1*5+2+G1+G2+P032+P032P62
446. =[G1*(P017+P062+P02=P047+P032**2)+1]**=TO)+2+G1+G2+P032+P032P62+T1
447. TO*G2-1
448. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
449. T2=2+G1+G2+P032+P032P62+T1
450. T3=[G1*(P018+P063+P03=P048+P033**2)+1]**=TO
451. RJP62=[SG[IM1,J,K)=(2+G1+G2+P032+P032P62+T3*5+T2)+2+G1+G2+SG[I,J,K
452. ]+P032+P032P62+T1*5+2+G1+G2+P032+P032P62+T3+T2]/4.0
453. TO*G2-1
454. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
455. T2=2+G1+G2+P032+P032P62+T1
456. T3=[G1*(P018+P063+P03=P048+P033**2)+1]**=TO
457. T4=[G1*(P053+P08+P023=P068+P038**2)+1]**=TO
458. T5=P053+P08P62+P053P62+P08+P023=P068P62+P023P62+P068+2*P038+
459. P038P62
460. T6=G1+G2+T4+T5
461. T7=[G1*(P054+P09+P024=P088+P039**2)+1]**=TO
462. T8=P054+P09P62+P054P62+P09+P024=P088P62+P024P62+P088+2*P039+
463. P039P62
464. RKP62=[SG[IM1,J,KM1)=(G1+G2+T7+T8*5+T6)+SG[IM1,J,K)=(2+G1+G2+P032+
465. P032P62+T3*5+T2)+G1+G2+SG[I,J,KM1)=T4+T5+2+G1+G2+SG[I,J,K)=P032
466. +P032P62+T1*5+G1+G2+T7+T8+T6+2+G1+G2+P032+P032P62+T3+T2]/4.0
467. TO*G2-1
468. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
469. T2=2+G1+G2+P032+P032P62+T1
470. T3=[G1*(P018+P063+P03=P048+P033**2)+1]**=TO
471. RJP62=[SG[IM1,J,K)=(2+G1+G2+P032+P032P62+T3*5+T2)+2+G1+G2+SG[I,J,
472. K)=P032+P032P62+T1*5+2+G1+G2+P032+P032P62+T3+T2]/4.0
473. TO*G2-1
474. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
475. T2=2+G1+G2+P032+P032P62+T1
476. T3=[G1*(P018+P063+P03=P048+P033**2)+1]**=TO
477. RKP62=[SG[IM1,J,K)=(2+G1+G2+P032+P032P62+T3*5+T2)+2+G1+G2+SG[I,J,
478. K)=P032+P032P62+T1*5+2+G1+G2+P032+P032P62+T3+T2]/4.0
479. RESP62=[(P88-P83)=RKP62+TA33M+2*XIXI(J,I)=OXINF=RKP62/DZETAC(K)]=
480. V2+[(P88+P113)=RKP62+TA33P+2*XIXI(J,I)=OXINF=RKP62/DZETAC(K)]=
481. V1+5*[RIMP62+TA12M+[(P83+P82-P88-P87)=TAJ2+(P88+P87-P83-P82)=
482. TAJ1]+(P88-P87)=RIMP62+TA11M+2*OXINF=RIMP62/DXIC(I)]=RIPP62+TA12P
483. =[(P84-P83-P89-P88)=TAJ2+(P88+P87-P83-P82)=TAJ1]+S*(RJP62+TA21M+
484. [(P88-P88+P84-P83)=TAI2+(P88-P87+P83-P82)=TAI1]+(P88-P83)=RJP62+
485. TA22M)+RJP62+TA21P+[(P84-P83+P89-P88)=TAI2+(P83-P82+P88-P87)=
486. TAI1]+(P83-P88)=RJP62+TA22P+(P88-P88)=RIPP62+TA11P+2*OXINF+
487. RIPP62/DXIC(I)
488. DER = RESP62
489.
490. C P83
491. ELSEIF [CND(I1,JJ,KK,I,J,KM1)] THEN
492. P07P63 = DXII[I]*S
493. P08P63 = DXII[IM1]
494. P022P63 = [-AJ2(J)+AJ1(J)]/2.0
495. P023P63 = [-AJ2(J)+AJ1(J)]/2.0
496. P031P63 = -(1.0/2.0*A1K(K))
497. P032P63 = -(1.0/2.0*A1K(K))
498. P037P63 = [-A2K(KM1)+A1K(KM1)]/2.0
499. P038P63 = [-A2K(KM1)+A1K(KM1)]/2.0
500. P052P63 = DXII[I]*A11R(J,I)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0
501. P053P63 = [-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/2.0+DXII[IM1]*A11R(J,IM1)
502. P067P63 = DXII[I]*XIYIP(J,I)*S+(-AJ2(J)+AJ1(J))/2.0
503. P068P63 = DXII[IM1]*XIYIP(J,IM1)+(-AJ2(J)+AJ1(J))/2.0
504. TO*G2-1
505. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
506. RIPP63=SG[I,J,K)=(2+G1+G2+P032+P032P63+T1*5+2+G1+G2+P032+P032P63+
507. G1*(P018+P063+P03=P048+P033**2)+1]**=TO)+2+G1+G2+P032+P032P63+T1
508. RIMP63=(2+G1+G2+SG[IM1,J,K)=P032+P032P63=[G1*(P017+P062+P02=P047+
509. P032**2)+1]**=(G2-1)
510. TO*G2-1
511. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
512. RJP63=[SG[I,J,K)=(2+G1+G2+P032+P032P63+T1*5+2+G1+G2+P032+P032P63+
513. G1*(P018+P063+P03=P048+P033**2)+1]**=TO)+2+G1+G2+SG[IM1,J,K)=P032+
514. P032P63+T1+2+G1+G2+P032+P032P63+T1]/4.0
515. TO*G2-1
516. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
517. T2=[G1*(P053+P08+P023=P068+P038**2)+1]**=TO
518. T3=P053+P08P63+P053P63+P08+P023=P068P63+P023P63+P068+2*P038+
519. P038P63
520. RKP63=[SG[I,J,KM1)=(G1+G2+T2+T3*5+G1+G2=[G1*(P052+P07+P022=P067+
521. P037**2)+1]**=TO)+P052+P07P63+P052P63+P07+P022=P067P63+P022P63+
522. P067+2+P037+P037P63)]*SG[I,J,K)=(2+G1+G2+P032+P032P63+T1*5+2+G1+
523. G2+P032=P031P63=[G1*(P018+P063+P03=P048+P033**2)+1]**=TO)+G1+G2+SG
524. [IM1,J,KM1)=T2+T3+G1+G2+T2+T3+2+G1+G2+SG[IM1,J,K)=P032+P032P63+T1]/4.0
525. TO*G2-1
526. T1=[G1*(P017+P062+P02=P047+P032**2)+1]**=TO
527. RJP63=[SG[I,J,K)=(2+G1+G2+P032+P032P63+T1*5+2+G1+G2+P032+P032P63+

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528. . [G1=(P016+P051+P01+P046+P031==2)+1]==TO)+2+G1+G2+SG(IM1,J,K)+P032
529. . +P032P63+T1+2+G1+G2+P032+P032P63+T1)/4.0
530. TO+G2-1
531. T1+([G1=(P017+P052+P02+P047+P032==2)+1]==TO
532. RKP63+([SG(IM1,J,K)=(2+G1+G2+P032+P032P63+T1+5+2+G1+G2+P031+P031P63+
533. . [G1=(P016+P051+P01+P046+P031==2)+1]==TO)+2+G1+G2+SG(IM1,J,K)+P032
534. . +P032P63+T1+2+G1+G2+P032+P032P63+T1)/4.0
535. RESP63+([P66-P63]=RKP63+TA33M+2+XIXI(J,I)=OZINF=RKP63/
536. DZETAC(K))+V2+([P66+P113]=RKP63+TA33P+2+XIXI(J,I)=OZINF=RKP63/
537. DZETAC(K))+V1+5+([RIMP63+TA12M+([P63+P62-P66-P67]=TAJ2+([P66+P67-
538. P63-P62)=TAJ1]+([P66-P67]=RIMP63+TA11M+2+OXINF=RIMP63/DXIC(I))+
539. RIPP63+TA12P+([P64+P63-P66-P66]=TAJ2+([P66+P66-P66-P63)=TAJ1]+S+
540. RJP63+TA21M+([P66-P66+P64-P63)=TA12+([P66+P67+P63-P62)=TA11]+([P66-
541. P63)=RJP63+TA22M)+RJP63+TA21P+([P64+P63+P66-P66]=TA12+([P63+P62+
542. P66-P67)=TA11]+([P63-P66]=RJP63+TA22P+([P66-P66]=RIPP63+TA11P+2+
543. OXINF=RIPP63/DXIC(I)
544. DER = RESP63
545.
546. C P64
547. ELSEIF (CND(II,JJ,KK,IP1,J,KM1)) THEN
548. P07P64 = DXII(I)
549. P022P64 = (-AJ2(J)+AJ1(J))/2.0
550. P031P64 = -(1.0/2.0+AIK(K))
551. P037P64 = (-A2K(KM1)+AIK(KM1))/2.0
552. P052P64 = (-AJ2(J)+AJ1(J))+XIYIP(J,I)/2.0+DXII(I)=A1R(J,I)
553. P067P64 = DXII(I)+XIYIP(J,I)+(-AJ2(J)+AJ1(J))/2.0
554. RIPP64+2+G1+G2+SG(I,J,K)+P031+P031P64+([G1=(P016+P051+P01+P046+P031==2
555. . +2)+1]==(G2-1)
556. RJP64+G1+G2+SG(I,J,K)+P031+P031P64+([G1=(P016+P051+P01+P046+P031==2
557. . +1)==(G2-1))/2.0
558. TO+G2-1
559. RKP64+([G1+G2+SG(I,J,KM1)=([G1=(P052+P07+P022+P067+P037==2)+1]==TO+
560. . P052+P07P64+P052P64+P07+P022+P067P64+P022P64+P067+2+P037+P037P64+
561. . +2+G1+G2+SG(I,J,K)+P031+P031P64+([G1=(P016+P051+P01+P046+P031==2)+
562. . +1]==TO)/4.0
563. RJP64+G1+G2+SG(I,J,K)+P031+P031P64+([G1=(P016+P051+P01+P046+P031==
564. . 2)+1]==(G2-1))/2.0
565. RKP64+G1+G2+SG(I,J,K)+P031+P031P64+([G1=(P016+P051+P01+P046+P031==
566. . 2)+1]==(G2-1))/2.0
567. RESP64+([P66-P63]=RKP64+TA33M+2+XIXI(J,I)=OZINF=RKP64/DZETAC(K))+
568. V2+([P66+P113]=RKP64+TA33P+2+XIXI(J,I)=OZINF=RKP64/DZETAC(K))+
569. V1+RIPP64+TA12P+([P64+P63-P66-P66]=TAJ2+([P66+P66-P66-P63)=TAJ1]+
570. S+([RJP64+TA21M+([P66-P66+P64-P63)=TA12+([P66+P67+P63-P62)=TA11]+
571. P66-P63)=RJP64+TA22M)+RJP64+TA21P+([P64+P63+P66-P66]=TA12+([P63+
572. P62+P66-P67)=TA11]+([P63-P66]=RJP64+TA22P+([P66-P66]=RIPP64+TA11P+
573. 2+OXINF=RIPP64/DXIC(I)
574. DER = RESP64
575.
576. C P65
577. ELSEIF (CND(II,JJ,KK,IM2,JP1,KM1)) THEN
578. P024P65 = AJ2(J)/2.0
579. P042P65 = -(1.0/2.0+AIK(K))
580. P054P65 = AJ2(J)+XIYIP(J,IM2)/2.0
581. P069P65 = AJ2(J)/2.0
582. TO+P054P65+P05+P024+P069P65+P024P65+P055
583. T1+([G1=(P054+P05+P024+P069+P038==2)+1]==(G2-1)
584. RKP65+([SG(IM1,J,KM1)=TO+T1+5+G1+G2+TO+T1)/4.0
585. TO+([G1=(P027+P072+P012+P057+P042==2)+1]==(G2-1)
586. RJP65+([2+G1+G2+SG(IM1,JP1,K)+P042+P042P65+TO+5+2+G1+G2+P042+
587. . P042P65+TO)/4.0
588. RESP65+([P66-P63]=RKP65+TA33M+2+XIXI(J,I)=OZINF=RKP65/DZETAC(K))+
589. V2+RJP65+TA21P+([P64+P63+P66-P66]=TA12+([P63+P62+P66-P67)=TA11]+
590. P63-P66)=RJP65+TA22P
591. DER = RESP65
592.
593. C P67
594. ELSEIF (CND(II,JJ,KK,IM1,JP1,KM1)) THEN
595. P023P67 = AJ2(J)/2.0
596. P024P67 = AJ2(J)/2.0
597. P041P67 = -(1.0/2.0+AIK(K))
598. P042P67 = -(1.0/2.0+AIK(K))
599. P053P67 = AJ2(J)+XIYIP(J,IM1)/2.0
600. P054P67 = AJ2(J)+XIYIP(J,IM2)/2.0
601. P068P67 = AJ2(J)/2.0
602. P069P67 = AJ2(J)/2.0
603. TO+P053P67+P05+P023+P068P67+P023P67+P068
604. T1+G2-1
605. T2+([G1=(P053+P05+P023+P068+P038==2)+1]==T1
606. T3+G1+G2+TO+T2
607. T4+P054P67+P05+P024+P068P67+P024P67+P055
608. T5+([G1=(P054+P05+P024+P068+P038==2)+1]==T1
609. RKP67+([SG(IM1,J,KM1)=([G1+G2+T4+T5+5+T3)+G1+G2+SG(I,J,KM1)=TO+T2+5+
610. . G1+G2+T4+T5+T3)/4.0
611. TO+G2-1
612. T1+([G1=(P026+P071+P011+P056+P041==2)+1]==TO
613. T2+2+G1+G2+P041+P041P67+T1
614. T3+([G1=(P027+P072+P012+P057+P042==2)+1]==TO
615. RJP67+([SG(IM1,JP1,K)+([2+G1+G2+P042+P042P67+T3+5+T2)+2+G1+G2+SG(I,
616. . JP1,K)+P041+P041P67+T1+5+2+G1+G2+P042+P042P67+T3+T2)/4.0
617. RESP67+([P66-P63]=RKP67+TA33M+2+XIXI(J,I)=OZINF=RKP67/DZETAC(K))+
618. V2+RJP67+TA21P+([P64+P63+P66-P66]=TA12+([P63+P62+P66-P67)=TA11]+
619. P63-P66)=RJP67+TA22P
620. DER = RESP67
621.
622. C P68
623. ELSEIF (CND(II,JJ,KK,I,JP1,KM1)) THEN
624. P022P68 = AJ2(J)/2.0
625. P023P68 = AJ2(J)/2.0
626. P040P68 = -(1.0/2.0+AIK(K))
627. P041P68 = -(1.0/2.0+AIK(K))
628. P052P68 = AJ2(J)+XIYIP(J,I)/2.0
629. P053P68 = AJ2(J)+XIYIP(J,IM1)/2.0
630. P067P68 = AJ2(J)/2.0
631. P068P68 = AJ2(J)/2.0
632. TO+P053P68+P05+P023+P068P68+P023P68+P055
633. T1+G2-1
634. T2+([G1=(P053+P05+P023+P068+P038==2)+1]==T1
635. RKP68+([SG(I,J,KM1)=([G1+G2+TO+T2+5+G1+G2+([P052P68+P07+P022+P067P68+
636. . P022P68+P067]+([G1=(P052+P07+P022+P067+P037==2)+1]==T1)+G1+G2+SG(
637. . IM1,J,KM1)=TO+T2+G1+G2+TO+T2)/4.0
638. TO+G2-1
639. T1+([G1=(P026+P071+P011+P056+P041==2)+1]==TO
640. RJP68+([SG(I,JP1,K)+([2+G1+G2+P041+P041P68+T1+5+2+G1+G2+P040+
641. . P040P68+([G1=(P025+P070+P010+P055+P040==2)+1]==TO)+2+G1+G2+SG(IM1,
642. . JP1,K)+P041+P041P68+T1+2+G1+G2+P041+P041P68+T1)/4.0
643. RESP68+([P66-P63]=RKP68+TA33M+2+XIXI(J,I)=OZINF=RKP68/DZETAC(K))+
644. V2+RJP68+TA21P+([P64+P63+P66-P66]=TA12+([P63+P62+P66-P67)=TA11]+
645. P63-P66)=RJP68+TA22P
646. DER = RESP68
647.
648. C P69
649. ELSEIF (CND(II,JJ,KK,IP1,JP1,KM1)) THEN
650. P022P69 = AJ2(J)/2.0
651. P040P69 = -(1.0/2.0+AIK(K))
652. P052P69 = AJ2(J)+XIYIP(J,I)/2.0
653. P067P69 = AJ2(J)/2.0
654. RKP69+G1+G2+SG(I,J,KM1)=([P052P69+P07+P022+P067P69+P022P69+P067]+
655. . G1=(P052+P07+P022+P067+P037==2)+1]==(G2-1)/4.0
656. RJP69+G1+G2+SG(I,JP1,K)+P040+P040P69+([G1=(P026+P070+P010+P056+
657. . P040==2)+1]==(G2-1))/2.0
658. RESP69+([P66-P63]=RKP69+TA33M+2+XIXI(J,I)=OZINF=RKP69/DZETAC(K))+
659. V2+RJP69+TA21P+([P64+P63+P66-P66]=TA12+([P63+P62+P66-P67)=TA11]+
660. P63-P66)=RJP69+TA22P
661. DER = RESP69
662.
663. C P70
664. ELSEIF (CND(II,JJ,KK,IM2,JP1,KM1)) THEN
665. P021P70 = -(1.0/2.0+AJ1(JM1))

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860. POS1P76 = -[1.0/2.0*AJ1(JM1)]*XIYIP(JM1,IM2))
861. POS6P76 = -[1.0/2.0*AJ1(JM1)]
862. TO1(G1=[P021+P066+P051+P06+P036**2)+1]**[G2-1]
863. T1+P021+P066P76+P021P76+P066+P051P76+P06
864. RJP76=[G1+G2+SG(IM1,JM1,K)]*TO+T1+S+G1+G2+TO+T1)/4.0
865. RESP76+S=[RJP76+TA21M=[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=
866. TA11]+(P68-P63)=RJP76+TA22M]
867. DER = RESP76
868.
869. C P77
870. ELSEIF [CND[I1,JJ,KK,IM1,IM2,K]] THEN
871. P020P77 = -[1.0/2.0*AJ1(JM1)]
872. P021P77 = -[1.0/2.0*AJ1(JM1)]
873. P050P77 = -[1.0/2.0*AJ1(JM1)]*XIYIP(JM1,IM1)]
874. P051P77 = -[1.0/2.0*AJ1(JM1)]*XIYIP(JM1,IM2)]
875. P065P77 = -[1.0/2.0*AJ1(JM1)]
876. P066P77 = -[1.0/2.0*AJ1(JM1)]
877. TO+G2-1
878. T1=[G1=[P020+P065+P05+P050+P035**2)+1]**TO
879. T2+P020+P065P77+P020P77+P065+P05+P050P77
880. T3+G1+G2+T1+T2
881. T4=[G1=[P021+P066+P051+P06+P036**2)+1]**TO
882. T5+P021+P066P77+P021P77+P066+P051P77+P06
883. RJP77=[SG(IM1,JM1,K)]*(G1+G2+T4+T5+S+T3)+G1+G2+SG(I1,JM1,K)=T1+T2+S+
884. G1+G2+T4+T5+T3)/4.0
885. RESP77+S=[RJP77+TA21M=[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=
886. TA11]+(P68-P63)=RJP77+TA22M]
887. DER = RESP77
888.
889. C P78
890. ELSEIF [CND[I1,JJ,KK,I,IM2,K]] THEN
891. P019P78 = -[1.0/2.0*AJ1(JM1)]
892. P020P78 = -[1.0/2.0*AJ1(JM1)]
893. P049P78 = -[1.0/2.0*AJ1(JM1)]*XIYIP(JM1,I)]
894. P050P78 = -[1.0/2.0*AJ1(JM1)]*XIYIP(JM1,IM1)]
895. P064P78 = -[1.0/2.0*AJ1(JM1)]
896. P065P78 = -[1.0/2.0*AJ1(JM1)]
897. TO+G2-1
898. T1=[G1=[P020+P065+P05+P050+P035**2)+1]**TO
899. T2+P020+P065P78+P020P78+P065+P05+P050P78
900. RJP78=[SG(I1,JM1,K)]*(G1+G2+T1+T2+S+G1+G2)+(G1=[P019+P064+P04+P049+
901. P034**2)+1]**TO+(P019+P064P78+P019P78+P064+P04+P049P78)/4.0
902. T1+IM1,JM1,K)=T1+T2+G1+G2+T1+T2)/4.0
903. RESP78+S=[RJP78+TA21M=[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=
904. TA11]+(P68-P63)=RJP78+TA22M]
905. DER = RESP78
906.
907. C P79
908. ELSEIF [CND[I1,JJ,KK,I,P1,IM2,K]] THEN
909. P019P79 = -[1.0/2.0*AJ1(JM1)]
910. P049P79 = -[1.0/2.0*AJ1(JM1)]*XIYIP(JM1,I)]
911. P064P79 = -[1.0/2.0*AJ1(JM1)]
912. RJP79+G1+G2+SG(I1,JM1,K)]*(G1=[P019+P064+P04+P049+P034**2)+1]**[G2-1
913. ]+[P019+P064P79+P019P79+P064+P04+P049P78]/4.0
914. RESP79+S=[RJP79+TA21M=[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=
915. TA11]+(P68-P63)=RJP79+TA22M]
916. DER = RESP79
917.
918. C P81
919. ELSEIF [CND[I1,JJ,KK,IM2,JM1,K]] THEN
920. P08P81 = DXII(IM2)*S
921. P018P81 = -[1.0/2.0*AJ1(J)]
922. P021P81 = [-AJ2(JM1)+AJ1(JM1)]/2.0
923. P038P81 = [-A2K(K)+A1K(K)]/2.0
924. P048P81 = -[1.0/2.0*AJ1(J)]*XIYIP(J,IM2)]
925. P051P81 = DXII(IM2)=A11R(JM1,IM2)*S+[-AJ2(JM1)+AJ1(JM1)]*XIYIP(JM1
926. ,IM2)/2.0
927. P063P81 = -[1.0/2.0*AJ1(J)]
928. P066P81 = DXII(IM2)=XIYIP(JM1,IM2)*S+[-AJ2(JM1)+AJ1(JM1)]/2.0
929. TO+G1=[P018+P063+P03+P048+P033**2)+1]**[G2-1]
930. T1+P018+P063P81+P018P81+P063+P03+P048P81
931. RIMP81+G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1
932. TO+G2-1
933. T1=[G1=[P018+P063+P03+P048+P033**2)+1]**TO
934. T2+P018+P063P81+P018P81+P063+P03+P048P81
935. T3=[G1=[P021+P066+P051+P06+P036**2)+1]**TO
936. T4+P021+P066P81+P021P81+P066+P051P81+P06+P036+
937. P036P81
938. RJP81=[G1+G2+SG(IM1,JM1,K)=T3+T4+S+G1+G2+SG(IM1,J,K)=T1+T2+S+G1+G2
939. =T3+T4+G1+G2+T1+T2)/4.0
940. TO+G1=[P018+P063+P03+P048+P033**2)+1]**[G2-1]
941. T1+P018+P063P81+P018P81+P063+P03+P048P81
942. RKP81=[G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1)/4.0
943. TO+G1=[P018+P063+P03+P048+P033**2)+1]**[G2-1]
944. T1+P018+P063P81+P018P81+P063+P03+P048P81
945. RJP81=[G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1)/4.0
946. TO+G1=[P018+P063+P03+P048+P033**2)+1]**[G2-1]
947. T1+P018+P063P81+P018P81+P063+P03+P048P81
948. RKP81=[G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1)/4.0
949. RESP81=[(P64-P63)=RKP81+TA33M+2*X[XXI(J,I)]=OZINF=RKP81/DZETAC(K)]*
950. V2+[-(P68+P113)=RKP81+TA33P+2*X[XXI(J,I)]=OZINF=RKP81/DZETAC(K)]
951. +Y1+S=[RIMP81+TA12M=[(P63+P62-P68-P67)=TAJ2+(P68+P67-P63-P62)=
952. TAJ1]+(P68-P67)=RIMP81+TA11M+2*OZINF=RIMP81/OXIC(I)]*S=[RJP81+
953. TA21M=[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=TA11]+(P68-P63)=
954. RJP81+TA22M)+RJP81+TA21P=[(P64-P63+P69-P66)=TA12+(P63-P62+P66-
955. P67)=TA11]+(P63-P68)=RJP81+TA22P]
956. DER = RESP81
957.
958. C P82
959. ELSEIF [CND[I1,JJ,KK,IM1,JM1,K]] THEN
960. P05P82 = DXII(IM1)*S
961. P06P82 = DXII(IM2)
962. P017P82 = -[1.0/2.0*AJ1(J)]
963. P018P82 = -[1.0/2.0*AJ1(J)]
964. P020P82 = [-AJ2(JM1)+AJ1(JM1)]/2.0
965. P021P82 = [-AJ2(JM1)+AJ1(JM1)]/2.0
966. P035P82 = [-A2K(K)+A1K(K)]/2.0
967. P038P82 = [-A2K(K)+A1K(K)]/2.0
968. P047P82 = -[1.0/2.0*AJ1(J)]*XIYIP(J,IM1)]
969. P048P82 = -[1.0/2.0*AJ1(J)]*XIYIP(J,IM2)]
970. P06P82 = DXII(IM1)=A11R(JM1,IM1)*S+[-AJ2(JM1)+AJ1(JM1)]*XIYIP(JM1
971. ,IM1)/2.0
972. P061P82 = [-AJ2(JM1)+AJ1(JM1)]*XIYIP(JM1,IM2)/2.0+DXII(IM2)=A11R(
973. JM1,IM2)
974. P062P82 = -[1.0/2.0*AJ1(J)]
975. P063P82 = -[1.0/2.0*AJ1(J)]
976. P065P82 = DXII(IM1)=XIYIP(JM1,IM1)*S+[-AJ2(JM1)+AJ1(JM1)]/2.0
977. P066P82 = DXII(IM2)=XIYIP(JM1,IM2)+[-AJ2(JM1)+AJ1(JM1)]/2.0
978. TO+G1=[P017+P062+P02+P047+P032**2)+1]**[G2-1]
979. T1+P017+P062P82+P017P82+P062+P02+P047P82
980. RJP82+G1+G2+SG(I1,J,K)=TO+T1+S+G1+G2+TO+T1
981. TO+G2-1
982. T1=[G1=[P018+P063+P03+P048+P033**2)+1]**TO
983. T2+P018+P063P82+P018P82+P063+P03+P048P82
984. RIMP82+SG(IM1,J,K)=G1+G2+T1+T2+S+G1+G2=(G1=[P017+P062+P02+P047+
985. P032**2)+1]**TO+(P017+P062P82+P017P82+P062+P02+P047P82)+G1+G2+T1
986. =T2
987. TO+G2-1
988. T1=[G1=[P017+P062+P02+P047+P032**2)+1]**TO
989. T2+P017+P062P82+P017P82+P062+P02+P047P82
990. T3+G1+G2+T1+T2
991. T4=[G1=[P018+P063+P03+P048+P033**2)+1]**TO
992. T5+P018+P063P82+P018P82+P063+P03+P048P82
993. T6=[G1=[P020+P065+P05+P050+P035**2)+1]**TO
994. T7+P020+P065P82+P020P82+P065+P050+P05P82+P05+P050P82+2+P035+
995. P035P82
996. T8+G1+G2+T6+T7

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792. T8=(G1+{P021+P066+P051+P05+P036+2})+1)=-TO
793. T10+P051+P06P82+P021+P066P82+P021P82+P066+P051P82+P06+2+P036+
794. P036P82
795. RJP82+{SG[IM1,JM1,K]}={G1+G2+T8+T10+5+TA)+SG[IM1,J,K]}={G1+G2+T4+T5+
796. 5+T3)+G1+G2+SG[IM1,J,K]}+T8+T7+5+G1+G2+SG[IM1,J,K]}+T1+T2+5+G1+G2+T8+
797. T10+T8+G1+G2+T4+T5+T3)/4.0
798. T0+G2-1
799. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
800. T2+P017+P062P82+P017P82+P062+P02+P047P82
801. T3+G1+G2+T1+T2
802. T4+{G1+{P018+P063+P03+P048+P033+2})+1)=-TO
803. T5+P018+P063P82+P018P82+P063+P03+P048P82
804. RKP82+{SG[IM1,J,K]}={G1+G2+T4+T5+5+T3)+G1+G2+SG[IM1,J,K]}+T1+T2+5+G1+
805. G2+T4+T5+T3)/4.0
806. T0+G2-1
807. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
808. T2+P017+P062P82+P017P82+P062+P02+P047P82
809. T3+G1+G2+T1+T2
810. T4+{G1+{P018+P063+P03+P048+P033+2})+1)=-TO
811. T5+P018+P063P82+P018P82+P063+P03+P048P82
812. RJP82+{SG[IM1,J,K]}={G1+G2+T4+T5+5+T3)+G1+G2+SG[IM1,J,K]}+T1+T2+5+G1+
813. G2+T4+T5+T3)/4.0
814. T0+G2-1
815. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
816. T2+P017+P062P82+P017P82+P062+P02+P047P82
817. T3+G1+G2+T1+T2
818. T4+{G1+{P018+P063+P03+P048+P033+2})+1)=-TO
819. T5+P018+P063P82+P018P82+P063+P03+P048P82
820. RKP82+{SG[IM1,J,K]}={G1+G2+T4+T5+5+T3)+G1+G2+SG[IM1,J,K]}+T1+T2+5+G1+
821. G2+T4+T5+T3)/4.0
822. RESP82+{P88+P83}=RKP82+TA33M+2+X1XX1[J,I]+QZINF+RKP82/DZETAC(K))=
823. V2+{(-P88+P113)=RKP82+TA33P+2+X1XX1[J,I]+QZINF+RKP82/DZETAC(K))}
824. +V1+5+{RIMP82+TA12M+{P83+P82-P88-P87}=TAJ2+{P88+P87-P83-P82}=
825. TAJ1+{RIMP82+TA12M+TAJ1+{P88-P87}=RIMP82+TA11M+2+QXINF+RIMP82/DXIC
826. ([I])=RIPP82+TA12P+{P84+P83-P89-P88}=TAJ2+{P89+P88-P84-P83}=TAJ1+
827. +5+{RJP82+TA21M+{P88-P88+P84-P83}=TA12+{P88+P87+P83-P82}=TA11+{
828. RJP82+TA21M+TA11+{P88-P83}=RJP82+TA22M+RJP82+TA21P+{P84-P83+P89-
829. P88}=TA12+{P83-P82+P88-P87}=TA11+{P83-P88}=RJP82+TA22P+{P89-P88
830. }=RIPP82+TA11P+2+QXINF+RIPP82/DXIC(I)
831. DER = RESP82
832. C P83
833. ELSEIF (CND(I1,JJ,KK,I,JM1,K)) THEN
834. P04P83 = DXII(I1)=5
835. P06P83 = DXII(IM1)
836. P018P83 = -(1.0/2.0*AJ1[J])
837. P017P83 = -(1.0/2.0*AJ1[J])
838. P019P83 = {-AJ2(JM1)+AJ1(JM1)}/2.0
839. P020P83 = {-AJ2(JM1)+AJ1(JM1)}/2.0
840. P034P83 = {-AZK(K)+A1K(K)}/2.0
841. P035P83 = {-AZK(K)+A1K(K)}/2.0
842. P048P83 = -(1.0/2.0*AJ1[J])*XIYIP(J,I)
843. P047P83 = -(1.0/2.0*AJ1[J])*XIYIP(J,IM1)
844. P049P83 = DXII(I1)+A11R(JM1,I)+5+{-AJ2(JM1)+AJ1(JM1)}*XIYIP(JM1,I)/
845. 2.0
846. P060P83 = {-AJ2(JM1)+AJ1(JM1)}*XIYIP(JM1,IM1)/2.0+DXII(IM1)+A11R(
847. JM1,IM1)
848. P081P83 = -(1.0/2.0*AJ1[J])
849. P082P83 = -(1.0/2.0*AJ1[J])
850. P084P83 = DXII(I1)*XIYIP(JM1,I)+5+{-AJ2(JM1)+AJ1(JM1)}/2.0
851. P085P83 = DXII(IM1)*XIYIP(JM1,IM1)+{-AJ2(JM1)+AJ1(JM1)}/2.0
852. T0+G2-1
853. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
854. T2+P017+P062P83+P017P83+P062+P02+P047P83
855. RIPP83+SG[IM1,J,K]}={G1+G2+T1+T2+5+G1+G2+{G1+{P018+P061+P01+P046+P031
856. +2})+1)=-TO+{P018+P061P83+P018P83+P061+P01+P046P83)+G1+G2+T1+T2
857. RIMP83+G1+G2+SG[IM1,J,K]}={G1+{P017+P062+P02+P047+P032+2})+1)=-{G2-
858. 1)+{P017+P062P83+P017P83+P062+P02+P047P83)
859. T0+G2-1
860. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
861. T2+P017+P062P83+P017P83+P062+P02+P047P83
862. T3+{G1+{P020+P085+P06+P050+P035+2})+1)=-TO
863. T4+P020+P085P83+P020P83+P085+P050+P05P83+P05+P050P83+2+P035+
864. P035P83
865. RJP83+{SG[IM1,JM1,K]}={G1+G2+T3+T4+5+G1+G2+{G1+{P018+P064+P04+P048+
866. P034+2})+1)=-TO+{P018+P064P83+P018P83+P064+P04+P048P83+P04+
867. P048P83+2+P034+P034P83)+SG[IM1,J,K]}={G1+G2+T1+T2+5+G1+G2+{G1+{P018
868. +P061+P01+P046+P031+2})+1)=-TO+{P018+P061P83+P018P83+P061+P01+
869. P046P83)+G1+G2+SG[IM1,JM1,K]}+T3+T4+G1+G2+T3+T4+G1+G2+SG[IM1,J,K]
870. +T1+T2+G1+G2+T1+T2)/4.0
871. T0+G2-1
872. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
873. T2+P017+P062P83+P017P83+P062+P02+P047P83
874. RKP83+{SG[IM1,J,K]}={G1+G2+T1+T2+5+G1+G2+{G1+{P018+P061+P01+P046+P031
875. +2})+1)=-TO+{P018+P061P83+P018P83+P061+P01+P046P83)+G1+G2+SG[IM1
876. ,J,K]}+T1+T2+G1+G2+T1+T2)/4.0
877. T0+G2-1
878. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
879. T2+P017+P062P83+P017P83+P062+P02+P047P83
880. RJP83+{SG[IM1,J,K]}={G1+G2+T1+T2+5+G1+G2+{G1+{P018+P061+P01+P046+
881. P031+2})+1)=-TO+{P018+P061P83+P018P83+P061+P01+P046P83)+G1+G2+SG
882. [IM1,J,K]}+T1+T2+G1+G2+T1+T2)/4.0
883. T0+G2-1
884. T1+{G1+{P017+P062+P02+P047+P032+2})+1)=-TO
885. T2+P017+P062P83+P017P83+P062+P02+P047P83
886. RKP83+{SG[IM1,J,K]}={G1+G2+T1+T2+5+G1+G2+{G1+{P018+P061+P01+P046+
887. P031+2})+1)=-TO+{P018+P061P83+P018P83+P061+P01+P046P83)+G1+G2+SG
888. [IM1,J,K]}+T1+T2+G1+G2+T1+T2)/4.0
889. RESP83+{P88+P83}=RKP83+TA33M+2+X1XX1[J,I]+QZINF+RKP83/DZETAC(K))=
890. V2+{(-P88+P113)=RKP83+TA33P+2+X1XX1[J,I]+QZINF+RKP83/DZETAC(K))}
891. +V1+5+{RIMP83+TA12M+{P83+P82-P88-P87}=TAJ2+{P88+P87-P83-P82}=
892. TAJ1+{RIMP83+TA12M+TAJ1+{P88-P87}=RIMP83+TA11M+2+QXINF+RIMP83/DXIC
893. ([I])=RIPP83+TA12P+{P84+P83-P89-P88}=TAJ2+{P89+P88-P84-P83}=TAJ1+
894. +{RJP83+TA12P+TAJ1+5+{RJP83+TA21M+{P89-P88+P84-P83}=TA12+{P88+P87
895. +P83-P82}=TA11+RJP83+TA21M+{P89-P88+P84-P83}=TA12+{P88+P87+P83-P82}
896. +TA22M)+RJP83+TA21P+{P84-P83+P89-P88}=TA12+{P83-P82+P88-P87}=
897. TA11+{P83-P88}=RJP83+TA22P+{P89-P88}=RIPP83+TA11P+2+QXINF+
898. RIPP83/DXIC(I)
899. DER = RESP83
900. C P84
901. ELSEIF (CND(I1,JJ,KK,IP1,JM1,K)) THEN
902. P04P84 = DXII(I1)
903. P018P84 = -(1.0/2.0*AJ1[J])
904. P019P84 = {-AJ2(JM1)+AJ1(JM1)}/2.0
905. P034P84 = {-AZK(K)+A1K(K)}/2.0
906. P048P84 = -(1.0/2.0*AJ1[J])*XIYIP(J,I)
907. P049P84 = {-AJ2(JM1)+AJ1(JM1)}*XIYIP(JM1,I)/2.0+DXII(I1)+A11R(JM1,I)
908. }
909. P081P84 = -(1.0/2.0*AJ1[J])
910. P084P84 = DXII(I1)*XIYIP(JM1,I)+{-AJ2(JM1)+AJ1(JM1)}/2.0
911. RIPP84+G1+G2+SG[IM1,J,K]}={G1+{P018+P061+P01+P046+P031+2})+1)=-{G2-1)
912. +{P018+P061P84+P018P84+P061+P01+P046P84)
913. T0+G2-1
914. RJP84+{G1+G2+SG[IM1,JM1,K]}={G1+{P018+P064+P04+P048+P034+2})+1)=-TO+{
915. P018+P064P84+P018P84+P064+P04+P048P84+P04+P034+P034P84)
916. +G1+G2+SG[IM1,J,K]}={G1+{P018+P061+P01+P046+P031+2})+1)=-TO+{P018+
917. P061P84+P018P84+P061+P01+P046P84)}/4.0
918. RKP84+G1+G2+SG[IM1,J,K]}={G1+{P018+P061+P01+P046+P031+2})+1)=-{G2-1)+
919. {P018+P061P84+P018P84+P061+P01+P046P84)}/4.0
920. RJP84+G1+G2+SG[IM1,J,K]}={G1+{P018+P061+P01+P046+P031+2})+1)=-{G2-1)
921. +{P018+P061P84+P018P84+P061+P01+P046P84)}/4.0
922. RKP84+G1+G2+SG[IM1,J,K]}={G1+{P018+P061+P01+P046+P031+2})+1)=-{G2-1)
923. +{P018+P061P84+P018P84+P061+P01+P046P84)}/4.0

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824. RESP84=((P86-P83)*RPP84+TA33M*2+X1XX1(J,I)*QZINF+RKP84/DZETAC(K))
825. Y2+((-P86+P113)*RPP84+TA33P*2+X1XX1(J,I)*QZINF+RKP84/DZETAC(K))
826. V1+RIPP84+TA12P*((P84+P93-P89-P88)*TAJ2+P89+P88-P84-P83)*TAJ1+
827. (R1P*TA12P*TAJ1)+S*(RJP84+TA21M*((P89+P88+P84-P83)*TA12+P88+P87+
828. P83-P82)*TA11)+RJP*TA21M*TA12+(P88-P83)*RJP84+TA22M)*RJP84+TA21P*
829. ((P84+P93+P89-P88)*TA12+(P83+P92+P88-P87)*TA11)+(P93+P88)*RJP84+
830. TA22P*(P89-P88)*RIPP84+TA11P*2+QXINF+RIPP84/DXIC(I))
831. DER = RESP84
832.
833. C P86
834. ELSEIF (CND[I,J,K,IM2,J,K]) THEN
835. P03P86 = DXI1(IM2)*S
836. P018P86 = (-AJ2(J)+AJ1(J))/2.0
837. P021P86 = AJ2(JM1)/2.0
838. P027P86 = -(1.0/2.0*AJ1(JP1))
839. P033P86 = (-A2K(K)+A1K(K))/2.0
840. P038P86 = A2K(KM1)/2.0
841. P045P86 = -(1.0/2.0*A1K(KP1))
842. P048P86 = DXI1(IM2)*A11R(J,IM2)*S+(-AJ2(J)+AJ1(J))*X1YIP(J,IM2)/
843. 2.0
844. P051P86 = AJ2(JM1)*X1YIP(JM1,IM2)/2.0
845. P057P86 = -(1.0/2.0*AJ1(JP1))*X1YIP(JP1,IM2)
846. P063P86 = DXI1(IM2)*X1YIP(J,IM2)*S+(-AJ2(J)+AJ1(J))/2.0
847. P068P86 = AJ2(JM1)/2.0
848. P072P86 = -(1.0/2.0*AJ1(JP1))
849. T0=(G1*(P018+P063+P03+P048+P033==2)+1)==(G2-1)
850. T1=P018+P063P86+P018P86+P063+P03+P048P86+P03P86+P048+2+P033+
851. P033P86
852. RIMP86=G1=G2=SG(IM1,J,K)*T0+T1+S+G1=G2=T0+T1
853. T0=G2-1
854. T1=(G1*(P018+P063+P03+P048+P033==2)+1)==T0
855. T2=P018+P063P86+P018P86+P063+P03+P048P86+P03P86+P048+2+P033+
856. P033P86
857. T3=(G1*(P021+P068+P051+P08+P038==2)+1)==T0
858. T4=P021+P068P86+P021P86+P068+P051P86+P08
859. RJP86=(G1=G2=SG(IM1,JM1,K)*T3+T4+S+G1=G2=SG(IM1,J,K)*T1+T2+S+G1=G2
860. +T3+T4+G1=G2+T1+T2)/4.0
861. T0=G2-1
862. T1=(G1*(P018+P063+P03+P048+P033==2)+1)==T0
863. T2=P018+P063P86+P018P86+P063+P03+P048P86+P03P86+P048+2+P033+
864. P033P86
865. T3=(G1*(P054+P09+P024+P069+P039==2)+1)==T0
866. RKP86=(2+G1=G2=SG(IM1,J,KM1)*P039+P039P86+T3+S+G1=G2=SG(IM1,J,K)*
867. T1+T2+S+2+G1=G2=P039+P039P86+T3+G1=G2+T1+T2)/4.0
868. T0=G2-1
869. T1=(G1*(P018+P063+P03+P048+P033==2)+1)==T0
870. T2=P018+P063P86+P018P86+P063+P03+P048P86+P03P86+P048+2+P033+
871. P033P86
872. T3=(G1*(P027+P072+P012+P057+P042==2)+1)==T0
873. T4=P027+P072P86+P027P86+P072+P012+P057P86
874. RJP86=(G1=G2=SG(IM1,JP1,K)*T3+T4+S+G1=G2=SG(IM1,J,K)*T1+T2+S+G1=
875. G2+T3+T4+G1=G2+T1+T2)/4.0
876. T0=G2-1
877. T1=(G1*(P018+P063+P03+P048+P033==2)+1)==T0
878. T2=P018+P063P86+P018P86+P063+P03+P048P86+P03P86+P048+2+P033+
879. P033P86
880. T3=(G1*(P030+P075+P015+P050+P045==2)+1)==T0
881. RKP86=(2+G1=G2=SG(IM1,J,KP1)*P045+P045P86+T3+S+G1=G2=SG(IM1,J,K)*
882. T1+T2+S+2+G1=G2=P045+P045P86+T3+G1=G2+T1+T2)/4.0
883. RESP85=((P86-P83)*RPP86+TA33M*2+X1XX1(J,I)*QZINF+RKP86/DZETAC(K))
884. Y2+((-P86+P113)*RPP86+TA33P*2+X1XX1(J,I)*QZINF+RKP86/DZETAC(K))
885. V1+S*(RIMP86+TA12M*((P93+P82-P88-P87)*TAJ2+P88+P87-P83-P82)*
886. TAJ1)+P88-P87)*RIMP86+TA11M*2+QXINF+RIMP86/DXIC(I))+S*(RJP86+
887. TA21M*((P89+P88+P84-P83)*TA12+(P88-P87+P83-P82)*TA11)+(P88-P83)*
888. RJP86+TA22M)*RJP86+TA21P*((P84+P93+P89-P88)*TA12+(P83+P92+P88-
889. P87)*TA11)+(P93+P88)*RJP86+TA22P
890. DER = RESP86

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891. C P87
892. ELSEIF (CND[I,J,K,IM1,J,K]) THEN
893. P02P87 = DXI1(IM1)*S
894. P03P87 = DXI1(IM2)
895. P017P87 = (-AJ2(J)+AJ1(J))/2.0
896. P018P87 = (-AJ2(J)+AJ1(J))/2.0
897. P020P87 = AJ2(JM1)/2.0
898. P021P87 = AJ2(JM1)/2.0
899. P026P87 = -(1.0/2.0*AJ1(JP1))
900. P027P87 = -(1.0/2.0*AJ1(JP1))
901. P032P87 = (-A2K(K)+A1K(K))/2.0
902. P033P87 = (-A2K(K)+A1K(K))/2.0
903. P038P87 = A2K(KM1)/2.0
904. P039P87 = A2K(KM1)/2.0
905. P044P87 = -(1.0/2.0*A1K(KP1))
906. P045P87 = -(1.0/2.0*A1K(KP1))
907. P047P87 = DXI1(IM1)*A11R(J,IM1)*S+(-AJ2(J)+AJ1(J))*X1YIP(J,IM1)/
908. 2.0
909. P048P87 = (-AJ2(J)+AJ1(J))*X1YIP(J,IM2)/2.0+DXI1(IM2)*A11R(J,IM2)
910. P050P87 = AJ2(JM1)*X1YIP(JM1,IM1)/2.0
911. P051P87 = AJ2(JM1)*X1YIP(JM1,IM2)/2.0
912. P056P87 = -(1.0/2.0*AJ1(JP1))*X1YIP(JP1,IM1)
913. P057P87 = -(1.0/2.0*AJ1(JP1))*X1YIP(JP1,IM2)
914. P062P87 = DXI1(IM1)*X1YIP(J,IM1)*S+(-AJ2(J)+AJ1(J))/2.0
915. P063P87 = DXI1(IM2)*X1YIP(J,IM2)+(-AJ2(J)+AJ1(J))/2.0
916. P065P87 = AJ2(JM1)/2.0
917. P066P87 = AJ2(JM1)/2.0
918. P071P87 = -(1.0/2.0*AJ1(JP1))
919. P072P87 = -(1.0/2.0*AJ1(JP1))
920. T0=(G1*(P017+P062+P02+P047+P032==2)+1)==(G2-1)
921. T1=P017+P062P87+P017P87+P062+P02+P047P87+P02P87+P047+2+P032+
922. P032P87
923. RIPP87=G1=G2=SG(I,J,K)*T0+T1+S+G1=G2=T0+T1
924. T0=G2-1
925. T1=(G1*(P018+P063+P03+P048+P033==2)+1)==T0
926. T2=P018+P063P87+P018P87+P063+P03+P048P87+P03P87+P048+2+P033+
927. P033P87
928. RIMP87=SG(IM1,J,K)=(G1=G2+T1+T2+S+G1=G2*(G1=(P017+P062+P02+P047+
929. P032==2)+1)==T0*(P017+P062P87+P017P87+P062+P02+P047P87+P02P87+
930. P047+2+P032+P032P87))+G1=G2+T1+T2
931. T0=G2-1
932. T1=(G1*(P017+P062+P02+P047+P032==2)+1)==T0
933. T2=P017+P062P87+P017P87+P062+P02+P047P87+P02P87+P047+2+P032+
934. P032P87
935. T3=G1=G2+T1+T2
936. T4=(G1*(P018+P063+P03+P048+P033==2)+1)==T0
937. T5=P018+P063P87+P018P87+P063+P03+P048P87+P03P87+P048+2+P033+
938. P033P87
939. T6=(G1*(P020+P065+P05+P050+P035==2)+1)==T0
940. T7=P020+P065P87+P020P87+P065+P05+P050P87
941. T8=G1=G2+T5+T7
942. T9=(G1*(P021+P066+P051+P08+P038==2)+1)==T0
943. T10=P021+P066P87+P021P87+P066+P051P87+P08
944. RJP87=(SG(IM1,JM1,K)=(G1=G2+T9+T10+S+T8)*SG(IM1,J,K)=(G1=G2+T4+T5+
945. S+T3)+G1=G2=SG(I,JM1,K)*T6+T7+S+G1=G2=SG(I,J,K)*T1+T2+S+G1=G2+T9+
946. T10+T8+G1=G2+T4+T5+T3)/4.0
947. T0=G2-1
948. T1=(G1*(P017+P062+P02+P047+P032==2)+1)==T0
949. T2=P017+P062P87+P017P87+P062+P02+P047P87+P02P87+P047+2+P032+
950. P032P87
951. T3=G1=G2+T1+T2
952. T4=(G1*(P018+P063+P03+P048+P033==2)+1)==T0
953. T5=P018+P063P87+P018P87+P063+P03+P048P87+P03P87+P048+2+P033+
954. P033P87
955. T6=(G1*(P053+P08+P023+P068+P038==2)+1)==T0
956. T7+2+G1=G2+P038+P038P87+T8

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1056. TB: [G1: (P054+P09+P024+P068+P039==2)+1]==TO
1057. RKP87: [SG[IM1, J, KM1]] = (2*G1+G2+P038+P039P87+T8+S+T7)+SG[IM1, J, K] = (
1058. G1+G2+T8+T5+S+T3)+2*G1+G2+SG[1, J, KM1] = P038+P039P87+T8+S+G1+G2+SG[
1059. 1, J, K] = T1+T2+S+2*G1+G2+P038+P039P87+T8+T7+G1+G2+T4+T5+T3)/4.0
1060. T0+G2-1
1061. T1: [G1: (P017+P062+P02+P047+P032==2)+1]==TO
1062. T2+P017+P062P87+P017P87+P062+P02+P047P87+P02P87+P047+2+P032=
1063. P032P87
1064. T3+G1+G2+T1+T2
1065. T4: [G1: (P018+P063+P03+P048+P033==2)+1]==TO
1066. T5+P018+P063P87+P018P87+P063+P03+P048P87+P03P87+P048+2+P033=
1067. P033P87
1068. T6: [G1: (P028+P071+P011+P058+P041==2)+1]==TO
1069. T7+P028+P071P87+P028P87+P071+P011+P058P87
1070. T8+G1+G2+T6+T7
1071. T9: [G1: (P027+P072+P012+P057+P042==2)+1]==TO
1072. T10+P027+P072P87+P027P87+P072+P012+P057P87
1073. RJPP87: [SG[IM1, JP1, K]] = (G1+G2+T8+T10+S+T6)+SG[IM1, J, K] = (G1+G2+T4+T5
1074. +S+T3)+G1+G2+SG[1, JP1, K] = T8+T7+S+G1+G2+SG[1, J, K] = T1+T2+S+G1+G2+T8
1075. +T10+T8+G1+G2+T4+T5+T3)/4.0
1076. T0+G2-1
1077. T1: [G1: (P017+P062+P02+P047+P032==2)+1]==TO
1078. T2+P017+P062P87+P017P87+P062+P02+P047P87+P02P87+P047+2+P032=
1079. P032P87
1080. T3+G1+G2+T1+T2
1081. T4: [G1: (P018+P063+P03+P048+P033==2)+1]==TO
1082. T5+P018+P063P87+P018P87+P063+P03+P048P87+P03P87+P048+2+P033=
1083. P033P87
1084. T6: [G1: (P029+P074+P014+P059+P044==2)+1]==TO
1085. T7+2*G1+G2+P044+P044P87+T8
1086. T8: [G1: (P030+P075+P015+P080+P045==2)+1]==TO
1087. RKP87: [SG[IM1, J, KP1]] = (2*G1+G2+P045+P045P87+T8+S+T7)+SG[IM1, J, K] = (
1088. G1+G2+T8+T5+S+T3)+2*G1+G2+SG[1, J, KP1] = P044+P044P87+T8+S+G1+G2+SG[
1089. 1, J, K] = T1+T2+S+2*G1+G2+P045+P045P87+T8+T7+G1+G2+T4+T5+T3)/4.0
1090. RESP87: [(P88-P83)-RKP87+TA33M+2*X1XX1[J, I]] = QZINF+RKP87/DZETAC(K)) =
1091. V2+[(P88-P83)-RKP87+TA33P+2*X1XX1[J, I]] = QZINF+RKP87/DZETAC(K)) =
1092. V1+S*(RIMP87+TA12M)-[(P83-P82-P88-P87)+TAJ2+(P88+P87-P83-P82)=
1093. TAJ1)+R1M+TA12M)-(-TAJ2+TAJ1)+(-P88-P87)+RIMP87+TA11M)-(R1M+TA11M)+2
1094. =OXINF+RIMP87/DXIC(1))-R1PP87+TA12P+[(P84+P83-P89-P88)+TAJ2+(P88+
1095. P88-P84-P83)+TAJ1)+S*(RJP87+TA21M)-[(P89-P88+P84-P83)+TA12+(-P88-
1096. P87+P83-P82)+TA11)-(-RJP87+TA21M+TA11)+(-P88-P83)+RJP87+TA22M)-RJP87=
1097. TA21P+[(P84-P83+P89-P88)+TA12+(-P83-P82-P88-P87)+TA11)-(-RJP87+TA21P=
1098. TA11)+(-P83-P88)+RJP87+TA22P+(-P89-P88)+R1PP87+TA11P+2*OXINF=
1099. R1PP87/DXIC(1))
1100. DER = RESP87
1101.
1102. C P88
1103. ELSEIF (CND[11, JJ, KK, I, J, K]) THEN
1104. P01P88 = DX11[I]==S
1105. P02P88 = DX11[IM1]
1106. P018P88 = (-AJ2[J]+AJ1[J])/2.0
1107. P017P88 = (-AJ2[J]+AJ1[J])/2.0
1108. P019P88 = AJ2[JM1]/2.0
1109. P020P88 = AJ2[JM1]/2.0
1110. P025P88 = -[1.0/2.0+AJ1[JP1]]
1111. P026P88 = -[1.0/2.0+AJ1[JP1]]
1112. P031P88 = [-A2K[K]+A1K[K]]/2.0
1113. P032P88 = [-A2K[K]+A1K[K]]/2.0
1114. P037P88 = A2K[KM1]/2.0
1115. P038P88 = A2K[KM1]/2.0
1116. P043P88 = -[1.0/2.0+AJ1[KP1]]
1117. P044P88 = -[1.0/2.0+AJ1[KP1]]
1118. P048P88 = DX11[I]+A11R[J, I]+S*(-AJ2[J]+AJ1[J])=X1YIP[J, I]/2.0
1119. P047P88 = (-AJ2[J]+AJ1[J])=X1YIP[J, IM1]/2.0+DX11[IM1]=A11R[J, IM1]
1120. P049P88 = AJ2[JM1]=X1YIP[JM1, I]/2.0
1121. P050P88 = AJ2[JM1]=X1YIP[JM1, IM1]/2.0
1122. P058P88 = -[1.0/2.0+AJ1[JP1]]+X1YIP[JP1, I]]
1123. P059P88 = -[1.0/2.0+AJ1[JP1]]+X1YIP[JP1, IM1]]
1124. P061P88 = DX11[I]+X1YIP[J, I]+S*(-AJ2[J]+AJ1[J])/2.0
1125. P062P88 = DX11[IM1]+X1YIP[J, IM1]+(-AJ2[J]+AJ1[J])/2.0
1126. P064P88 = AJ2[JM1]/2.0
1127. P065P88 = AJ2[JM1]/2.0
1128. P070P88 = -[1.0/2.0+AJ1[JP1]]
1129. P071P88 = -[1.0/2.0+AJ1[JP1]]
1130. T0+G2-1
1131. T1: [G1: (P017+P062+P02+P047+P032==2)+1]==TO
1132. T2+P017+P062P88+P017P88+P062+P02+P047P88+P02P88+P047+2+P032=
1133. P032P88
1134. R1PP88: [SG[1, J, K]] = (G1+G2+T1+T2+S+G1+G2+G1: (P018+P061+P01+P048+P031
1135. ==2)+1]==TO = (P018+P061P88+P018P88+P061+P01+P048P88+P01P88+P048+2+
1136. P031+P031P88))+G1+G2+T1+T2
1137. RIMP88: G1+G2+SG[IM1, J, K] = [G1: (P017+P062+P02+P047+P032==2)+1]==(G2-
1138. 1) = (P017+P062P88+P017P88+P062+P02+P047P88+P02P88+P047+2+P032=
1139. P032P88)
1140. T0+G2-1
1141. T1: [G1: (P017+P062+P02+P047+P032==2)+1]==TO
1142. T2+P017+P062P88+P017P88+P062+P02+P047P88+P02P88+P047+2+P032=
1143. P032P88
1144. T3: [G1: (P020+P065+P05+P050+P035==2)+1]==TO
1145. T4+P020+P065P88+P020P88+P065+P05+P050P88
1146. RJP88: [SG[1, JM1, K]] = (G1+G2+T3+T4+S+G1+G2+G1: (P019+P064+P04+P049+
1147. P034==2)+1]==TO = (P019+P064P88+P019P88+P064+P04+P049P88))+SG[1, J, K]
1148. = (G1+G2+T1+T2+S+G1+G2+G1: (P018+P061+P01+P048+P031==2)+1]==TO = (
1149. P018+P061P88+P018P88+P061+P01+P048P88+P01P88+P048+2+P031+P031P88)
1150. )+G1+G2+SG[IM1, JM1, K] = T3+T4+G1+G2+T3+T4+G1+G2+SG[IM1, J, K] = T1+T2+
1151. G1+G2+T1+T2)/4.0
1152. T0+G2-1
1153. T1: [G1: (P017+P062+P02+P047+P032==2)+1]==TO
1154. T2+P017+P062P88+P017P88+P062+P02+P047P88+P02P88+P047+2+P032=
1155. P032P88
1156. T3: [G1: (P063+P06+P023+P066+P036==2)+1]==TO
1157. RKP88: [SG[1, J, KM1]] = (2*G1+G2+P036+P036P88+T3+S+2*G1+G2+P037+P037P88
1158. = (G1+P052+P07+P022+P067+P037==2)+1]==TO)+SG[1, J, K] = (G1+G2+T1+T2+
1159. S+G1+G2+G1: (P016+P061+P01+P048+P031==2)+1]==TO = (P016+P061P88+
1160. P016P88+P061+P01+P048P88+P01P88+P048+2+P031+P031P88))+2*G1+G2+SG[
1161. IM1, J, KM1] = P036+P036P88+T3+2*G1+G2+P036+P036P88+T3+G1+G2+SG[IM1, J
1162. K] = T1+T2+G1+G2+T1+T2)/4.0
1163. T0+G2-1
1164. T1: [G1: (P017+P062+P02+P047+P032==2)+1]==TO
1165. T2+P017+P062P88+P017P88+P062+P02+P047P88+P02P88+P047+2+P032=
1166. P032P88
1167. T3: [G1: (P028+P071+P011+P058+P041==2)+1]==TO
1168. T4+P028+P071P87+P028P88+P071+P011+P058P88
1169. RJPP88: [SG[1, JP1, K]] = (G1+G2+T3+T4+S+G1+G2+G1: (P025+P070+P010+P055+
1170. P040==2)+1]==TO = (P025+P070P88+P025P88+P070+P010+P055P88))+SG[1, J,
1171. K] = (G1+G2+T1+T2+S+G1+G2+G1: (P018+P061+P01+P048+P031==2)+1]==TO = (
1172. P018+P061P88+P018P88+P061+P01+P048P88+P01P88+P048+2+P031+P031P88)
1173. )+G1+G2+SG[IM1, JP1, K] = T3+T4+G1+G2+T3+T4+G1+G2+SG[IM1, J, K] = T1+T2+
1174. G1+G2+T1+T2)/4.0
1175. T0+G2-1
1176. T1: [G1: (P017+P062+P02+P047+P032==2)+1]==TO
1177. T2+P017+P062P88+P017P88+P062+P02+P047P88+P02P88+P047+2+P032=
1178. P032P88
1179. T3: [G1: (P029+P074+P014+P059+P044==2)+1]==TO
1180. RKP88: [SG[1, J, KP1]] = (2*G1+G2+P044+P044P88+T3+S+2*G1+G2+P043+
1181. P043P88)+G1: (P028+P073+P013+P058+P043==2)+1]==TO)+SG[1, J, K] = (G1+
1182. G2+T1+T2+S+G1+G2+G1: (P018+P061+P01+P048+P031==2)+1]==TO = (P018+
1183. P061P88+P061+P01+P048P88+P01P88+P048+2+P031+P031P88))+2*
1184. G1+G2+SG[IM1, J, KP1] = P044+P044P88+T3+2*G1+G2+P044+P044P88+T3+G1+G2
1185. =SG[IM1, J, K] = T1+T2+G1+G2+T1+T2)/4.0
1186. RESP88: [(P88-P83)-RKP88+TA33M+RK+TA33M+2*X1XX1[J, I]] = QZINF+RKP88/
1187. DZETAC(K)) = V2+[(P88-P83)-RKP88+TA33P+2*X1XX1[J, I]] = QZINF+RKP88/

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1188. .TAJ2+{P88+P87-P83-P82}+TAJ1)+RIM+TA12M+{-TAJ2+TAJ1}+{P88+P87}*
1189. .RIMP88+TA11M+RIM+TA11M+2*DXINF+RIMP88/DXIC(I))+RIPP88+TA12P+{P88
1190. .+P83-P82-P88}*TAJ2+{P88+P88-P84-P83}*TAJ1)+RIP+TA12P+{-TAJ2+TAJ1}
1191. .+S+{RJP88+TA21M+{P88+P88-P84-P83}*TAI2+{P88+P87-P83-P82}*TAI1}+
1192. .RJ+TA21M+{-TAI2+TAI1}+{P88+P83}*RJP88+TA22M+RJ+TA22M+RJP88+
1193. .TA21P+{P88+P83-P88}*TAI2+{P83+P82-P88-P87}*TAI1)+RJP+TA21P+{
1194. .-TAI2+TAI1}+{P83+P88}*RJP88+TA22P+{RJP+TA22P}+{P88+P88}*RIPP88+
1195. .TA11P+{RIP+TA11P}+2*DXINF+RIPP88/DXIC(I)
1196. DER = RESP88
1197.
1198. C P89
1199. ELSEIF {CND(I1,JJ,KK,IP1,J,K)} THEN
1200. P01P89 = DXI(I1)
1201. P016P89 = [-AJ2(J)+AJ1(J)]/2.0
1202. P018P89 = AJ2(JM1)/2.0
1203. P025P89 = [-1.0/2.0+AJ1(JP1)]
1204. P031P89 = [-A2K(K)+A1K(K)]/2.0
1205. P037P89 = A2K(KM1)/2.0
1206. P043P89 = [-1.0/2.0+AK(KP1)]
1207. P046P89 = [-AJ2(J)+AJ1(J)]*XIYIP(J,I)/2.0+DXI(I1)*A1IR(J,I)
1208. P048P89 = AJ2(JM1)*XIYIP(JM1,I)/2.0
1209. P055P89 = [-1.0/2.0+AJ1(JP1)*XIYIP(JP1,I)]
1210. P051P89 = DXI(I1)*XIYIP(J,I)+[-AJ2(J)+AJ1(J)]/2.0
1211. P084P89 = AJ2(JM1)/2.0
1212. P070P89 = [-1.0/2.0+AJ1(JP1)]
1213. RIPP89+G1+G2+SG(I,J,K)={G1+{P016+P051+P01+P048+P031**2}+1}**{G2-1}
1214. +{P018+P061P89+P018P89+P061+P01+P046P89+P01P89+P048+2+P031+
1215. .P031P89}
1216. TO=G2-1
1217. RJP89={G1+G2+SG(I,JM1,K)={G1+{P019+P084+P04+P048+P034**2}+1}**TO+{
1218. .P019+P084P89+P019P89+P084+P04+P048P89}+G1+G2+SG(I,J,K)={G1+{P018+
1219. .P061+P01+P048+P031**2}+1}**TO+{P016+P061P89+P016P89+P061+P01+
1220. .P046P89+P01P89+P048+2+P031+P031P89}}/4.0
1221. TO=G2-1
1222. RKP89={2+G1+G2+SG(I,J,KM1)+P037+P037P89+{G1+{P052+P07+P022+P087+
1223. .P037**2}+1}**TO+G1+G2+SG(I,J,K)={G1+{P018+P061+P01+P046+P031**2}+
1224. .1}**TO+{P016+P061P89+P016P89+P061+P01+P046P89+P01P89+P048+2+P031+
1225. .P031P89}}/4.0
1226. TO=G2-1
1227. RJP89={G1+G2+SG(I,JP1,K)={G1+{P025+P070+P010+P055+P040**2}+1}**TO
1228. .+{P025+P070P89+P025P89+P070+P010+P055P89}+G1+G2+SG(I,J,K)={G1+{
1229. .P018+P061+P01+P048+P031**2}+1}**TO+{P016+P061P89+P016P89+P061+P01
1230. .+P046P89+P01P89+P048+2+P031+P031P89}}/4.0
1231. TO=G2-1
1232. RKP89={2+G1+G2+SG(I,J,KP1)+P043+P043P89+{G1+{P028+P073+P013+P058+
1233. .P043**2}+1}**TO+G1+G2+SG(I,J,K)={G1+{P016+P061+P01+P046+P031**2}+
1234. .1}**TO+{P016+P061P89+P016P89+P061+P01+P046P89+P01P89+P048+2+P031+
1235. .P031P89}}/4.0
1236. RESP89={P88+P83}*RKP89+TA33M+2*XIXXI(J,I)+QZINF+RKP89/DZETAC(K))+
1237. .V2+{(-P88+P113)*RKP89+TA33P+2*XIXXI(J,I)+QZINF+RKP89/DZETAC(K))
1238. .+V1+RIPP88+TA12P+{P84+P83-P89-P88}*TAJ2+{P88+P88-P84-P83}*TAJ1}+
1239. .RIP+TAI2P+{-TAJ2+TAJ1}+S+{RJP89+TA21M+{P88+P88-P84-P83}*TAI2+{
1240. .P88+P87-P83-P82}*TAI1}+RJ+TA21M+TAI2+{P88+P83}*RJP89+TA22M+
1241. .RJP89+TA21P+{P84+P83+P89-P88}*TAI2+{P83+P82+P88-P87}*TAI1}+RJP+
1242. .TA21P+TAI2+{P83+P88}*RJP89+TA22P+{P88+P88}*RIPP89+TA11P+RIP+
1243. .TA11P+2*DXINF+RIPP89/DXIC(I)
1244. DER = RESP89
1245.
1246. C P91
1247. ELSEIF {CND(I1,JJ,KK,IM2,JP1,K)} THEN
1248. P012P91 = DXI(I1IM2)*5
1249. P018P91 = AJ2(J)/2.0
1250. P027P91 = [-AJ2(JP1)+AJ1(JP1)]/2.0
1251. P042P91 = [-A2K(K)+A1K(K)]/2.0
1252. P048P91 = AJ2(J)*XIYIP(J,IM2)/2.0
1253. P057P91 = DXI(I1IM2)*A1IR(JP1,IM2)+S+[-AJ2(JP1)+AJ1(JP1)]*XIYIP(JP1
1254. .IM2)/2.0
1255. P063P91 = AJ2(J)/2.0
1256. P072P91 = DXI(I1IM2)*XIYIP(JP1,IM2)+S+[-AJ2(JP1)+AJ1(JP1)]/2.0
1257. TO={G1={P018+P063+P03+P048+P033**2}+1}**{G2-1}
1258. T1={G1={P018+P063+P03+P048+P033**2}+1}**{G2-1}
1259. RIMP91+G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1
1260. TO={G1={P018+P063+P03+P048+P033**2}+1}**{G2-1}
1261. T1={P018+P063P91+P018P91+P063+P03+P048P91}
1262. RJP91={G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1}/4.0
1263. TO={G1={P018+P063+P03+P048+P033**2}+1}**{G2-1}
1264. T1={P018+P063P91+P018P91+P063+P03+P048P91}
1265. RKP91={G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1}/4.0
1266. TO=G2-1
1267. T1={G1={P018+P063+P03+P048+P033**2}+1}**TO
1268. T2={P018+P063P91+P018P91+P063+P03+P048P91}
1269. T3={G1={P027+P072+P012+P057+P042**2}+1}**TO
1270. T4={P027+P072P91+P027P91+P072+P012+P057P91+P012P91+P057+2+P042+
1271. .P042P91}
1272. RJP91={G1+G2+SG(IM1,JP1,K)=T3+T4+S+G1+G2+SG(IM1,J,K)=T1+T2+S+G1+
1273. .G2+T3+T4+G1+G2+T1+T2}/4.0
1274. TO={G1={P018+P063+P03+P048+P033**2}+1}**{G2-1}
1275. T1={P018+P063P91+P018P91+P063+P03+P048P91}
1276. RKP91={G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1}/4.0
1277. RESP91={P88+P83}*RKP91+TA33M+2*XIXXI(J,I)+QZINF+RKP91/DZETAC(K))+
1278. .V2+{(-P88+P113)*RKP91+TA33P+2*XIXXI(J,I)+QZINF+RKP91/DZETAC(K))
1279. .+V1+S+{RIMP91+TA12M+{P83+P82-P88-P87}*TAJ2+{P88+P87-P83-P82}*
1280. .TAJ1}+{P88+P87}*RIMP91+TA11M+2*DXINF+RIMP91/DXIC(I)}+S+{RJP91+
1281. .TA21M+{P88+P88+P84-P83}*TAI2+{P88+P87-P83-P82}*TAI1}+{P88+P83}*
1282. .RJP91+TA22M+RJP91+TA21P+{P84+P83+P89-P88}*TAI2+{P83+P82+P88-
1283. .P87}*TAI1}+{P83+P88}*RJP91+TA22P
1284. DER = RESP91
1285.
1286. C P92
1287. ELSEIF {CND(I1,JJ,KK,IM1,JP1,K)} THEN
1288. P011P92 = DXI(I1IM1)*5
1289. P012P92 = DXI(I1IM2)
1290. P017P92 = AJ2(J)/2.0
1291. P018P92 = AJ2(J)/2.0
1292. P026P92 = [-AJ2(JP1)+AJ1(JP1)]/2.0
1293. P027P92 = [-AJ2(JP1)+AJ1(JP1)]/2.0
1294. P041P92 = [-A2K(K)+A1K(K)]/2.0
1295. P042P92 = [-A2K(K)+A1K(K)]/2.0
1296. P047P92 = AJ2(J)*XIYIP(J,IM1)/2.0
1297. P048P92 = AJ2(J)*XIYIP(J,IM2)/2.0
1298. P056P92 = DXI(I1IM1)*A1IR(JP1,IM1)+S+[-AJ2(JP1)+AJ1(JP1)]*XIYIP(JP1
1299. .IM1)/2.0
1300. P057P92 = [-AJ2(JP1)+AJ1(JP1)]*XIYIP(JP1,IM2)/2.0+DXI(I1IM2)*A1IR(
1301. .JP1,IM2)
1302. P062P92 = AJ2(J)/2.0
1303. P063P92 = AJ2(J)/2.0
1304. P071P92 = DXI(I1IM1)*XIYIP(JP1,IM1)+S+[-AJ2(JP1)+AJ1(JP1)]/2.0
1305. P072P92 = DXI(I1IM2)*XIYIP(JP1,IM2)+[-AJ2(JP1)+AJ1(JP1)]/2.0
1306. TO={G1={P017+P062+P02+P047+P032**2}+1}**{G2-1}
1307. T1={P017+P062P92+P017P92+P062+P02+P047P92}
1308. RIPP92+G1+G2+SG(I,J,K)=TO+T1+S+G1+G2+TO+T1
1309. TO=G2-1
1310. T1={G1={P018+P063+P03+P048+P033**2}+1}**TO
1311. T2={P018+P063P92+P018P92+P063+P03+P048P92}
1312. RIMP92+SG(IM1,J,K)={G1+G2+T1+T2+S+G1+G2={G1={P017+P062+P02+P047+
1313. .P032**2}+1}**TO+{P017+P062P92+P017P92+P062+P02+P047P92}}+G1+G2+T1
1314. .+T2
1315. TO=G2-1
1316. T1={G1={P017+P062+P02+P047+P032**2}+1}**TO
1317. T2={P017+P062P92+P017P92+P062+P02+P047P92}
1318. T3=G1+G2+T1+T2
1319. T4={G1={P018+P063+P03+P048+P033**2}+1}**TO
1320. T5={P018+P063P92+P018P92+P063+P03+P048P92}
1321. RJP92={SG(IM1,J,K)={G1+G2+T4+T5+S+T3}+G1+G2+SG(I,J,K)=T1+T2+S+G1+
1322. .G2+T4+T5+T3}/4.0

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1320. TO=G2-1
1321. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1322. T2=P017+P062P92+P017P92+P062+P02+P047P92
1323. T3=G1+G2+T1+T2
1324. T4=[G1=[P018+P063+P03+P048+P033==2)+1]==TO
1325. T5=P018+P063P92+P018P92+P063+P03+P048P92
1326. RKP92=[SG(IM1,J,K)=[G1+G2+T4+T5+5+T3)+G1+G2+SG(I,J,K)=T1+T2+5+G1+
1327. G2+T4+T5+T3]/4.0
1328. TO=G2-1
1329. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1330. T2=P017+P062P92+P017P92+P062+P02+P047P92
1331. T3=G1+G2+T1+T2
1332. T4=[G1=[P018+P063+P03+P048+P033==2)+1]==TO
1333. T5=P018+P063P92+P018P92+P063+P03+P048P92
1334. T6=[G1=[P026+P071+P011+P058+P041==2)+1]==TO
1335. T7=P026+P071P92+P026P92+P071+P011+P058P92+P011P92+P058+2+P041+
1336. P041P92
1337. T8=G1+G2+T6+T7
1338. T9=[G1=[P027+P072+P012+P057+P042==2)+1]==TO
1339. T10=P027+P072P92+P027P92+P072+P012+P057P92+P012P92+P057+2+P042+
1340. P042P92
1341. RJPP92=[SG(IM1,JP1,K)=[G1+G2+T9+T10+5+T8)+SG(IM1,J,K)=[G1+G2+T4+T5
1342. +5+T3)+G1+G2+SG(I,J,K)=T8+T7+5+G1+G2+SG(I,J,K)=T1+T2+5+G1+G2+T9
1343. +T10+T8+G1+G2+T4+T5+T3]/4.0
1344. TO=G2-1
1345. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1346. T2=P017+P062P92+P017P92+P062+P02+P047P92
1347. T3=G1+G2+T1+T2
1348. T4=[G1=[P018+P063+P03+P048+P033==2)+1]==TO
1349. T5=P018+P063P92+P018P92+P063+P03+P048P92
1350. RKP92=[SG(IM1,J,K)=[G1+G2+T4+T5+5+T3)+G1+G2+SG(I,J,K)=T1+T2+5+G1+
1351. G2+T4+T5+T3]/4.0
1352. RESP92=[(P68-P63)=RKP92+TA33M+2+X1XX1(J,I)=QZINF=RKP92/DZETAC(K)]=
1353. V2+[(P68+P113)=RKP92+TA33P+2+X1XX1(J,I)=QZINF=RKP92/DZETAC(K)]=
1354. +V1+5=[RIMP92+TA12M+[(P63+P62-P68-P67)=TAJ2+(P68+P67-P63-P62)=
1355. TAJ1)+R1M+TA12M+TAJ2+(P68-P67)=RIMP92+TA11M+2+QXINF=RIMP92/DXIC(I
1356. )]+R1PP92+TA12P+[(P64+P63-P68-P68)=TAJ2+(P69+P68-P64-P63)=TAJ1]+5
1357. +[RJP92+TA21M+[(P69-P68+P64-P63)=TA12+(P68-P67+P63-P62)=TA11]+[
1358. P68-P63]=RJPP92+TA22M)+RJPP92+TA21P+[(P64-P63+P69-P68)=TA12+(P63-
1359. P62+P68-P67)=TA11]+[RJP+TA21P+TA11]+(P63-P68)=RJPP92+TA22P+(P69-
1360. P68)=R1PP92+TA11P+2+QXINF=R1PP92/DXIC(I)
1361. DER = RESP92
1362.
1363. C P93
1364. ELSEIF [CND[II,JJ,KK,I,JP1,K]] THEN
1365. P010P93 = DXII[I]=5
1366. P011P93 = DXII[IM1]
1367. P018P93 = AJ2(J)/2.0
1368. P017P93 = AJ2(J)/2.0
1369. P025P93 = [-AJ2(JP1)+AJ1(JP1)]/2.0
1370. P028P93 = [-AJ2(JP1)+AJ1(JP1)]/2.0
1371. P040P93 = [-A2K(K)+A1K(K)]/2.0
1372. P041P93 = [-A2K(K)+A1K(K)]/2.0
1373. P048P93 = AJ2(J)=XIYIP(J,I)/2.0
1374. P047P93 = AJ2(J)=XIYIP(J,IM1)/2.0
1375. P065P93 = DXII[I]+A11R(JP1,I)=5+[-AJ2(JP1)+AJ1(JP1)]=XIYIP(JP1,I)/
1376. 2.0
1377. P068P93 = [-AJ2(JP1)+AJ1(JP1)]=XIYIP(JP1,IM1)/2.0+DXII[IM1]=A11R[
1378. JP1,IM1]
1379. P061P93 = AJ2(J)/2.0
1380. P062P93 = AJ2(J)/2.0
1381. P070P93 = DXII[I]=XIYIP(JP1,I)=5+[-AJ2(JP1)+AJ1(JP1)]/2.0
1382. P071P93 = DXII[IM1]=XIYIP(JP1,IM1)+[-AJ2(JP1)+AJ1(JP1)]/2.0
1383. TO=G2-1
1384. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1385. T2=P017+P062P93+P017P93+P062+P02+P047P93
1386. R1PP93=[SG(I,J,K)=[G1+G2+T1+T2+5+G1+G2=[G1=[P016+P061+P01+P046+P031
1387. ==2)+1]==TO=[P018+P061P93+P018P93+P061+P01+P046P93]+G1+G2+T1+T2
1388. R1MP93+G1+G2+SG(IM1,J,K)=[G1=[P017+P062+P02+P047+P032==2)+1]==(G2-
1389. 1)=[P017+P062P93+P017P93+P062+P02+P047P93]
1390. TO=G2-1
1391. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1392. T2=P017+P062P93+P017P93+P062+P02+P047P93
1393. RJPP93=[SG(I,J,K)=[G1+G2+T1+T2+5+G1+G2=[G1=[P016+P061+P01+P046+P031
1394. ==2)+1]==TO=[P018+P061P93+P018P93+P061+P01+P046P93]+G1+G2+SG(IM1
1395. J,K)=T1+T2+G1+G2+T1+T2]/4.0
1396. TO=G2-1
1397. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1398. T2=P017+P062P93+P017P93+P062+P02+P047P93
1399. RKP93=[SG(I,J,K)=[G1+G2+T1+T2+5+G1+G2=[G1=[P016+P061+P01+P046+P031
1400. ==2)+1]==TO=[P018+P061P93+P018P93+P061+P01+P046P93]+G1+G2+SG(IM1
1401. J,K)=T1+T2+G1+G2+T1+T2]/4.0
1402. TO=G2-1
1403. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1404. T2=P017+P062P93+P017P93+P062+P02+P047P93
1405. T3=[G1=[P026+P071+P011+P058+P041==2)+1]==TO
1406. T4=P026+P071P93+P026P93+P071+P011+P058P93+P011P93+P058+2+P041+
1407. P041P93
1408. RJPP93=[SG(I,JP1,K)=[G1+G2+T3+T4+5+G1+G2=[G1=[P025+P070+P010+P055+
1409. P040==2)+1]==TO=[P025+P070P93+P025P93+P070+P010+P055P93+P010P93+
1410. P055+2+P040+P040P93]+SG(I,J,K)=[G1+G2+T1+T2+5+G1+G2=[G1=[P016+
1411. P061+P01+P046+P031==2)+1]==TO=[P018+P061P93+P018P93+P061+P01+
1412. P046P93]+G1+G2+SG(IM1,JP1,K)=T3+T4+G1+G2+T3+T4+G1+G2+SG(IM1,J,K)
1413. =T1+T2+G1+G2+T1+T2]/4.0
1414. TO=G2-1
1415. T1=[G1=[P017+P062+P02+P047+P032==2)+1]==TO
1416. T2=P017+P062P93+P017P93+P062+P02+P047P93
1417. RKP93=[SG(I,J,K)=[G1+G2+T1+T2+5+G1+G2=[G1=[P016+P061+P01+P046+
1418. P031==2)+1]==TO=[P018+P061P93+P018P93+P061+P01+P046P93]+G1+G2+SG
1419. (IM1,J,K)=T1+T2+G1+G2+T1+T2]/4.0
1420. RESP93=[(P68-P63)=RKP93+TA33M+2+X1XX1(J,I)=QZINF=RKP93/DZETAC(K)]=
1421. V2+[(P68+P113)=RKP93+TA33P+2+X1XX1(J,I)=QZINF=RKP93/DZETAC(K)]=
1422. +V1+5=[RIMP93+TA12M+[(P63+P62-P68-P67)=TAJ2+(P68+P67-P63-P62)=
1423. TAJ1)+R1M+TA12M+TAJ2+(P68-P67)=RIMP93+TA11M+2+QXINF=RIMP93/DXIC(I
1424. )]+R1PP93+TA12P+[(P64+P63-P68-P68)=TAJ2+(P69+P68-P64-P63)=TAJ1]+5
1425. +[RJP+TA12P+TAJ2+5=[RJP93+TA21M+[(P69-P68+P64-P63)=TA12+(P68-P67+
1426. P63-P62)=TA11]+(P68-P63)=RJPP93+TA22M)+RJPP93+TA21P+[(P64-P63+P69-
1427. P68)=TA12+(P63-P62+P68-P67)=TA11]+RJP+TA21P+[-TA12+TA11]+(P63-P68
1428. )=RJPP93+TA22P+RJP+TA22P+(P69-P68)=R1PP93+TA11P+2+QXINF=R1PP93/
1429. DXIC(I)
1430. DER = RESP93
1431.
1432. C P94
1433. ELSEIF [CND[II,JJ,KK,IP1,JP1,K]] THEN
1434. P010P94 = DXII[I]
1435. P018P94 = AJ2(J)/2.0
1436. P025P94 = [-AJ2(JP1)+AJ1(JP1)]/2.0
1437. P040P94 = [-A2K(K)+A1K(K)]/2.0
1438. P048P94 = AJ2(J)=XIYIP(J,I)/2.0
1439. P065P94 = [-AJ2(JP1)+AJ1(JP1)]=XIYIP(JP1,I)/2.0+DXII[I]=A11R(JP1,I
1440. )
1441. P061P94 = AJ2(J)/2.0
1442. P070P94 = DXII[I]=XIYIP(JP1,I)+[-AJ2(JP1)+AJ1(JP1)]/2.0
1443. R1PP94+G1+G2+SG(I,J,K)=[G1=[P018+P061+P01+P046+P031==2)+1]==(G2-1)
1444. +[P018+P061P94+P018P94+P061+P01+P046P94]
1445. RJPP94+G1+G2+SG(I,J,K)=[G1=[P018+P061+P01+P046+P031==2)+1]==(G2-1)+
1446. [P018+P061P94+P018P94+P061+P01+P046P94]/4.0
1447. RKP94+G1+G2+SG(I,J,K)=[G1=[P018+P061+P01+P046+P031==2)+1]==(G2-1)+
1448. [P018+P061P94+P018P94+P061+P01+P046P94]/4.0
1449. TO=G2-1
1450. RJPP94=[G1+G2+SG(I,JP1,K)=[G1=[P025+P070+P010+P055+P040==2)+1]==TO
1451. = [P025+P070P94+P025P94+P070+P010+P055P94+P010P94+P055+2+P040+
1452. P040P94]+G1+G2+SG(I,J,K)=[G1=[P018+P061+P01+P046+P031==2)+1]==TO+
1453. [P018+P061P94+P018P94+P061+P01+P046P94]/4.0

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1452.      RKPP94=G1+G2+SG(I,J,K)*([G1*(P018+P061+P01+P048+P031**2)+1]**[G2-1]
1453.      *([P018+P061P94+P016P94+P061+P01+P048P94])/4.0
1454.      RESP94=[(P88-P83)*RKPP94+TA33M+2*X1XX1(J,I)*QZINF+RKPP94/DZETAC(K)]=
1455.      V2+[-(P88+P113)*RKPP94+TA33P+2*X1XX1(J,I)*QZINF+RKPP94/DZETAC(K)]=
1456.      *V1+RIPP94+TA12P*([P84+P93-P89-P88]*TAJ2+([P89+P88-P84-P83]*TAJ1)+
1457.      R1P+TA12P+TAJ2+5*[RJP94+TA21M*([P89-P88+P84-P83]*TA12+([P88-P87+
1458.      P83-P82]*TA11)+([P88-P83]*RJP94+TA22M)+RJP94+TA21P*([P94-P93+P89-
1459.      P88]*TA12+([P93-P82+P88-P87]*TA11)+RJP+TA21P+TA12+([P93-P88]*RJP94
1460.      +TA22P*([P89-P88)*RIPP94+TA11P+2*QXINF+RIPP94/DXIC(I]
1461.      DER = RESP94
1462.
1463. C P86
1464.      ELSEIF (CND([I,JJ,KK,IM2,JP2,K]) THEN
1465.      P027P86 = AJ2(JP1)/2.0
1466.      P057P86 = AJ2(JP1)*XIYIP(JP1,IM2)/2.0
1467.      P072P86 = AJ2(JP1)/2.0
1468.      TO=[G1*(P027+P072+P012+P057+P042**2)+1]**[G2-1]
1469.      T1=P027+P072P86+P027P86+P072+P012+P057P86
1470.      RJPP86=[G1+G2+SG(IM1,JP1,K)*TO+T1+5*G1+G2+TO+T1]/4.0
1471.      RESP86=RJPP86+TA21P*([P94-P93+P89-P88]*TA12+([P93-P92+P88-P87]*TA11
1472.      )+(P93-P88)*RJPP86+TA22P
1473.      DER = RESP86
1474.
1475. C P87
1476.      ELSEIF (CND([I,JJ,KK,IM1,JP2,K]) THEN
1477.      P028P87 = AJ2(JP1)/2.0
1478.      P027P87 = AJ2(JP1)/2.0
1479.      P056P87 = AJ2(JP1)*XIYIP(JP1,IM1)/2.0
1480.      P057P87 = AJ2(JP1)*XIYIP(JP1,IM2)/2.0
1481.      P071P87 = AJ2(JP1)/2.0
1482.      P072P87 = AJ2(JP1)/2.0
1483.      TO=G2-1
1484.      T1=[G1*(P028+P071+P011+P056+P041**2)+1]**TO
1485.      T2=P028+P071P87+P028P87+P071+P011+P056P87
1486.      T3=G1+G2+T1+T2
1487.      T4=[G1*(P027+P072+P012+P057+P042**2)+1]**TO
1488.      T5=P027+P072P87+P027P87+P072+P012+P057P87
1489.      RJPP87=[SG(IM1,JP1,K)*([G1+G2+T4+T5+5*T3]+G1+G2+SG(I,JP1,K)*T1+T2+5
1490.      *G1+G2+T4+T5+T3)/4.0
1491.      RESP87=RJPP87+TA21P*([P84-P93+P89-P88]*TA12+([P93-P92+P88-P87]*TA11
1492.      )+(P93-P88)*RJPP87+TA22P
1493.      DER = RESP87
1494.
1495. C P88
1496.      ELSEIF (CND([I,JJ,KK,I,JP2,K]) THEN
1497.      P025P88 = AJ2(JP1)/2.0
1498.      P028P88 = AJ2(JP1)/2.0
1499.      P055P88 = AJ2(JP1)*XIYIP(JP1,I)/2.0
1500.      P056P88 = AJ2(JP1)*XIYIP(JP1,IM1)/2.0
1501.      P070P88 = AJ2(JP1)/2.0
1502.      P071P88 = AJ2(JP1)/2.0
1503.      TO=G2-1
1504.      T1=[G1*(P028+P071+P011+P055+P041**2)+1]**TO
1505.      T2=P028+P071P88+P028P88+P071+P011+P055P88
1506.      RJPP88=[SG(I,JP1,K)*([G1+G2+T1+T2+5*G1+G2*([G1*(P025+P070+P010+P055+
1507.      P040**2)+1]**TO*(P025+P070P88+P025P88+P070+P010+P055P88))+G1+G2+
1508.      SG(IM1,JP1,K)*T1+T2+G1+G2+T1+T2)/4.0
1509.      RESP88=RJPP88+TA21P*([P84-P93+P89-P88]*TA12+([P93-P92+P88-P87]*TA11
1510.      )+(P93-P88)*RJPP88+TA22P
1511.      DER = RESP88
1512.
1513. C P89
1514.      ELSEIF (CND([I,JJ,KK,IP1,JP2,K]) THEN
1515.      P025P89 = AJ2(JP1)/2.0
1516.      P055P89 = AJ2(JP1)*XIYIP(JP1,I)/2.0
1517.      P070P89 = AJ2(JP1)/2.0
1518.      RJPP89=G1+G2+SG(I,JP1,K)*([G1*(P025+P070+P010+P055+P040**2)+1]**[G2
1519.      -1]+([P025+P070P89+P025P89+P070+P010+P055P89])/4.0
1520.      RESP89=RJPP89+TA21P*([P84-P93+P89-P88]*TA12+([P93-P92+P88-P87]*TA11
1521.      )+(P93-P88)*RJPP89+TA22P
1522.      DER = RESP89
1523.
1524. C P106
1525.      ELSEIF (CND([I,JJ,KK,IM2,JM1,KP1]) THEN
1526.      P030P106 = -(1.0/2.0*AJ1(J))
1527.      P038P106 = A2K(K)/2.0
1528.      P080P106 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM2))
1529.      P075P106 = -(1.0/2.0*AJ1(J))
1530.      TO=[G1*(P021+P068+P051+P08+P038**2)+1]**[G2-1]
1531.      RJPP106=[2*G1+G2+SG(IM1,JM1,K)*P038+P038P106+TO+5*2*G1+G2+P038+
1532.      P038P106+TO]/4.0
1533.      TO1=[G1*(P030+P075+P015+P080+P045**2)+1]**[G2-1]
1534.      T1=P030+P075P106+P030P106+P075+P015+P060P106
1535.      RKPP106=[G1+G2+SG(IM1,J,KP1)*TO+T1+5*G1+G2+TO+T1]/4.0
1536.      RESP106=[(-P88+P113)*RKPP106+TA33P+2*X1XX1(J,I)*QZINF+RKPP106/
1537.      DZETAC(K)]=V1+5*[RJP106+TA21M*([P89-P88+P84-P83]*TA12+([P88-P87+
1538.      P83-P82]*TA11)+([P88-P83]*RJP106+TA22M)
1539.      DER = RESP106
1540.
1541. C P107
1542.      ELSEIF (CND([I,JJ,KK,IM1,JM1,KP1]) THEN
1543.      P028P107 = -(1.0/2.0*AJ1(J))
1544.      P030P107 = -(1.0/2.0*AJ1(J))
1545.      P035P107 = A2K(K)/2.0
1546.      P036P107 = A2K(K)/2.0
1547.      P059P107 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
1548.      P080P107 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM2))
1549.      P074P107 = -(1.0/2.0*AJ1(J))
1550.      P075P107 = -(1.0/2.0*AJ1(J))
1551.      TO=G2-1
1552.      T1=[G1*(P020+P065+P05+P050+P035**2)+1]**TO
1553.      T2=2*G1+G2+P035+P035P107+T1
1554.      T3=[G1*(P021+P068+P051+P08+P038**2)+1]**TO
1555.      RJPP107=[SG(IM1,JM1,K)*([2*G1+G2+P038+P038P107+T3+5*T2]+2*G1+G2+SG(I
1556.      ,JM1,K)*P035+P035P107+T1+5*2*G1+G2+P038+P038P107+T3+T2)/4.0
1557.      TO=G2-1
1558.      T1=[G1*(P028+P074+P014+P059+P044**2)+1]**TO
1559.      T2=P028+P074P107+P028P107+P074+P014+P059P107
1560.      T3=G1+G2+T1+T2
1561.      T4=[G1*(P030+P075+P015+P080+P045**2)+1]**TO
1562.      T5=P030+P075P107+P030P107+P075+P015+P060P107
1563.      RKPP107=[SG(IM1,J,KP1)*([G1+G2+T4+T5+5*T3]+G1+G2+SG(I,J,KP1)*T1+T2+
1564.      5*G1+G2+T4+T5+T3)/4.0
1565.      RESP107=[(-P88+P113)*RKPP107+TA33P+2*X1XX1(J,I)*QZINF+RKPP107/
1566.      DZETAC(K)]=V1+5*[RJP107+TA21M*([P89-P88+P84-P83]*TA12+([P88-P87+
1567.      P83-P82]*TA11)+([P88-P83]*RJP107+TA22M)
1568.      DER = RESP107
1569.
1570. C P108
1571.      ELSEIF (CND([I,JJ,KK,I,JM1,KP1]) THEN
1572.      P028P108 = -(1.0/2.0*AJ1(J))
1573.      P029P108 = -(1.0/2.0*AJ1(J))
1574.      P034P108 = A2K(K)/2.0
1575.      P035P108 = A2K(K)/2.0
1576.      P058P108 = -(1.0/2.0*AJ1(J)*XIYIP(J,I))
1577.      P059P108 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
1578.      P073P108 = -(1.0/2.0*AJ1(J))
1579.      P074P108 = -(1.0/2.0*AJ1(J))
1580.      TO=G2-1
1581.      T1=[G1*(P020+P065+P05+P050+P035**2)+1]**TO
1582.      RJPP108=[G1*(IM1,JM1,K)*([2*G1+G2+P035+P035P108+T1+5*2*G1+G2+P034+
1583.      P034P108)+G1*(P018+P064+P04+P049+P034**2)+1]**TO+2*G1+G2+SG(IM1,
1584.      JM1,K)*P035+P035P108+T1+2*G1+G2+P035+P035P108+T1]/4.0
1585.      TO=G2-1
1586.      T1=[G1*(P028+P074+P014+P059+P044**2)+1]**TO
1587.      T2=P028+P074P108+P028P108+P074+P014+P059P108
1588.      RKPP108=[SG(I,J,KP1)*([G1+G2+T1+T2+5*G1+G2*([G1*(P028+P073+P013+P058
1589.      +P043**2)+1]**TO*(P028+P073P108+P028P108+P073+P013+P058P108))+G1+
1590.      G2+SG(IM1,J,KP1)*T1+T2+G1+G2+T1+T2)/4.0

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1584. RESP108:=[P88+P113]+RKPP108+TA33P+2+X1XX1[J,I]+QZINF+RKPP108/
1585. DZETAC(K)]+V1+S+RJP108+TA21M+([P88-P88-P88-P83]+TA12+P88-P87+
1586. P83-P82)+TA11)+P88-P83)+RJP108+TA22M)
1587. DER = RESP108
1588.
1589. C P108
1590. ELSEIF [CND[I1,JJ,KK,IP1,IM1,KP1]] THEN
1591. P028P108 = -[1.0/2.0+AJ1(J)]
1592. P038P108 = A2K(K)/2.0
1593. P058P108 = -[1.0/2.0+AJ1(J)]+XIYIP(J,I)
1594. P073P108 = -[1.0/2.0+AJ1(J)]
1595. RJP108+G1+G2+SG[I,IM1,K]+P034+P034P108=(G1+P018+P084+P04+P048+
1596. P034+2)+1)+[G2-1]/2.0
1597. RKPP108+G1+G2+SG[I,J,KP1]+(G1+P028+P073+P013+P058+P043+2)+1)+[G2-1]+(P028+P073P108+P028P108+P073+P013+P058P108)/4.0
1598. RESP108:=[P88+P113]+RKPP108+TA33P+2+X1XX1[J,I]+QZINF+RKPP108/
1599. DZETAC(K)]+V1+S+RJP108+TA21M+([P88-P88-P88-P83]+TA12+P88-P87+
1600. P83-P82)+TA11)+P88-P83)+RJP108+TA22M)
1601. DER = RESP108
1602.
1603. C P111
1604. ELSEIF [CND[I1,JJ,KK,IM2,J,KP1]] THEN
1605. P015P111 = DXI1[IM2]+S
1606. P030P111 = [-AJ2(J)+AJ1(J)]/2.0
1607. P033P111 = A2K(K)/2.0
1608. P045P111 = [-A2K(KP1)+A1K(KP1)]/2.0
1609. P080P111 = DXI1[IM2]+A11R(J,IM2)+S+[-AJ2(J)+AJ1(J)]+XIYIP(J,IM2)/
1610. 2.0
1611. P075P111 = DXI1[IM2]+XIYIP(J,IM2)+S+[-AJ2(J)+AJ1(J)]/2.0
1612. TO+G1+P018+P063+P03+P048+P033+2)+1)+[G2-1]
1613. RIMP111+2+G1+G2+SG[IM1,J,K]+P033+P033P111+TO+S+2+G1+G2+P033+
1614. P033P111+TO
1615. TO+G1+P018+P063+P03+P048+P033+2)+1)+[G2-1]
1616. RJP111+2+G1+G2+SG[IM1,J,K]+P033+P033P111+TO+S+2+G1+G2+P033+
1617. P033P111+TO)/4.0
1618. TO+G1+P018+P063+P03+P048+P033+2)+1)+[G2-1]
1619. RKP111+2+G1+G2+SG[IM1,J,K]+P033+P033P111+TO+S+2+G1+G2+P033+
1620. P033P111+TO)/4.0
1621. TO+G1+P018+P063+P03+P048+P033+2)+1)+[G2-1]
1622. RJP111+2+G1+G2+SG[IM1,J,K]+P033+P033P111+TO+S+2+G1+G2+P033+
1623. P033P111+TO)/4.0
1624. TO+G2-1
1625. T1+G1+P018+P063+P03+P048+P033+2)+1)+TO
1626. T2+G1+P030+P075+P015+P060+P045+2)+1)+TO
1627. T3+P030+P075P111+P030P111+P075+P015+P060P111+P015P111+P060+2+P045+
1628. P045P111
1629. RKPP111+G1+G2+SG[IM1,J,KP1]+T2+T3+S+2+G1+G2+SG[IM1,J,K]+P033+
1630. P033P111+T1+S+G1+G2+T2+T3+2+G1+G2+P033+P033P111+T1)/4.0
1631. RESP111:=[P88-P83]+RKPP111+TA33M+2+X1XX1[J,I]+QZINF+RKPP111/DZETAC(K
1632. )]+V2+[-P88+P113]+RKPP111+TA33P+2+X1XX1[J,I]+QZINF+RKPP111/
1633. DZETAC(K)]+V1+S+RIMP111+TA12M+([P83+P82-P88-P87)+TAJ2+P88+P87-
1634. P83-P82)+TAJ1)+P88-P87)+RIMP111+TA11M+2+OXINF+RIMP111/DXIC(I)]+S
1635. +RJP111+TA21M+([P88-P88+P84-P83)+TA12+P88-P87+P83-P82)+TA11)+P88-
1636. P83)+RJP111+TA22M)+RJP111+TA21P+([P84-P83+P89-P88)+TA12+P83-
1637. P82+P88-P87)+TA11)+P83-P88)+RJP111+TA22P
1638. DER = RESP111
1639.
1640. C P112
1641. ELSEIF [CND[I1,JJ,KK,IM1,J,KP1]] THEN
1642. P014P112 = DXI1[IM1]+S
1643. P015P112 = DXI1[IM2]
1644. P029P112 = [-AJ2(J)+AJ1(J)]/2.0
1645. P030P112 = [-AJ2(J)+AJ1(J)]/2.0
1646. P032P112 = A2K(K)/2.0
1647. P033P112 = A2K(K)/2.0
1648. P044P112 = [-A2K(KP1)+A1K(KP1)]/2.0
1649. P045P112 = [-A2K(KP1)+A1K(KP1)]/2.0
1650. P059P112 = DXI1[IM1]+A11R(J,IM1)+S+[-AJ2(J)+AJ1(J)]+XIYIP(J,IM1)/
1651. 2.0
1652. P080P112 = [-AJ2(J)+AJ1(J)]+XIYIP(J,IM2)/2.0+DXI1[IM2]+A11R(J,IM2)
1653. P074P112 = DXI1[IM1]+XIYIP(J,IM1)+S+[-AJ2(J)+AJ1(J)]/2.0
1654. P075P112 = DXI1[IM2]+XIYIP(J,IM2)+[-AJ2(J)+AJ1(J)]/2.0
1655. TO+G1+P017+P062+P02+P047+P032+2)+1)+[G2-1]
1656. RIPP112+2+G1+G2+SG[I,J,K]+P032+P032P112+TO+S+2+G1+G2+P032+P032P112
1657. +TO
1658. TO+G2-1
1659. T1+G1+P018+P063+P03+P048+P033+2)+1)+TO
1660. RIMP112+SG[IM1,J,K]+(2+G1+G2+P033+P033P112+T1+S+2+G1+G2+P032+
1661. P032P112+G1+P017+P062+P02+P047+P032+2)+1)+TO)+2+G1+G2+P033+
1662. P033P112+T1
1663. TO+G2-1
1664. T1+G1+P017+P062+P02+P047+P032+2)+1)+TO
1665. T2+2+G1+G2+P032+P032P112+T1
1666. T3+G1+P018+P063+P03+P048+P033+2)+1)+TO
1667. RJP112+SG[IM1,J,K]+(2+G1+G2+P033+P033P112+T3+S+T2)+2+G1+G2+SG[I,J
1668. ,K]+P032+P032P112+T1+S+2+G1+G2+P033+P033P112+T3+T2)/4.0
1669. TO+G2-1
1670. T1+G1+P017+P062+P02+P047+P032+2)+1)+TO
1671. T2+2+G1+G2+P032+P032P112+T1
1672. T3+G1+P018+P063+P03+P048+P033+2)+1)+TO
1673. RKP112+SG[IM1,J,K]+(2+G1+G2+P033+P033P112+T3+S+T2)+2+G1+G2+SG[I,J
1674. ,K]+P032+P032P112+T1+S+2+G1+G2+P033+P033P112+T3+T2)/4.0
1675. TO+G2-1
1676. T1+G1+P017+P062+P02+P047+P032+2)+1)+TO
1677. T2+2+G1+G2+P032+P032P112+T1
1678. T3+G1+P018+P063+P03+P048+P033+2)+1)+TO
1679. RJP112+SG[IM1,J,K]+(2+G1+G2+P033+P033P112+T3+S+T2)+2+G1+G2+SG[I,
1680. J,K]+P032+P032P112+T1+S+2+G1+G2+P033+P033P112+T3+T2)/4.0
1681. TO+G2-1
1682. T1+G1+P017+P062+P02+P047+P032+2)+1)+TO
1683. T2+2+G1+G2+P032+P032P112+T1
1684. T3+G1+P018+P063+P03+P048+P033+2)+1)+TO
1685. T4+G1+P029+P074+P014+P059+P044+2)+1)+TO
1686. T5+P029+P074P112+P029P112+P074+P014+P059P112+P014P112+P059+2+P044+
1687. P044P112
1688. T6+G1+G2+T4+T5
1689. T7+G1+P030+P075+P015+P060+P045+2)+1)+TO
1690. T8+P030+P075P112+P030P112+P075+P015+P060P112+P015P112+P060+2+P045+
1691. P045P112
1692. RKPP112+SG[IM1,J,KP1]+(G1+G2+T7+T8+S+T6)+SG[IM1,J,K]+(2+G1+G2+
1693. P033+P033P112+T3+S+T2)+G1+G2+SG[I,J,KP1]+T4+T5+S+2+G1+G2+SG[I,J,K
1694. ]+P032+P032P112+T1+S+G1+G2+T7+T8+T6+2+G1+G2+P033+P033P112+T3+T2)/
1695. 4.0
1696. RESP112:=[P88-P83]+RKPP112+TA33M+2+X1XX1[J,I]+QZINF+RKPP112/DZETAC(K
1697. )]+V2+[-P88+P113]+RKPP112+TA33P+2+X1XX1[J,I]+QZINF+RKPP112/
1698. DZETAC(K)]+V1+S+RIMP112+TA12M+([P83+P82-P88-P87)+TAJ2+P88+P87-
1699. P83-P82)+TAJ1)+P88-P87)+RIMP112+TA11M+2+OXINF+RIMP112/DXIC(I)]+S
1700. +RJP112+TA21M+([P88-P88+P84-P83)+TA12+P88-P87+P83-P82)+TA11)+P88-
1701. P83)+RJP112+TA22M)+RJP112+TA21P+([P84-P83+P89-P88)+TA12+P83-
1702. P82+P88-P87)+TA11)+P83-P88)+RJP112+TA22P+P88+P88)+RIMP112+
1703. TA11P+2+OXINF+RIPP112/DXIC(I)
1704. DER = RESP112
1705.
1706. C P113
1707. ELSEIF [CND[I1,JJ,KK,I,J,KP1]] THEN
1708. P013P113 = DXI1[I]+S
1709. P014P113 = DXI1[IM1]
1710. P026P113 = [-AJ2(J)+AJ1(J)]/2.0
1711. P029P113 = [-AJ2(J)+AJ1(J)]/2.0
1712. P031P113 = A2K(K)/2.0
1713. P032P113 = A2K(K)/2.0
1714. P043P113 = [-A2K(KP1)+A1K(KP1)]/2.0
1715. P044P113 = [-A2K(KP1)+A1K(KP1)]/2.0
1716. P058P113 = DXI1[I]+A11R(J,I)+S+[-AJ2(J)+AJ1(J)]+XIYIP(J,I)/2.0
1717. P059P113 = [-AJ2(J)+AJ1(J)]+XIYIP(J,IM1)/2.0+DXI1[IM1]+A11R(J,IM1)

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1716. P073P113 = DX11(I)*XIYIP(J,I)*S+[-AJ2(J)+AJ1(J)]/2.0
1717. P074P113 = DX11(IM1)*XIYIP(J,IM1)*[-AJ2(J)+AJ1(J)]/2.0
1718. TO=G2-1
1719. T1=[G1=(P017+P062+P02+P047+P032==2)+1]==TO
1720. RJP113=[SG(I,J,K)]*(2+G1+G2+P032+P032P113+T1)*S+2+G1+G2+P031+
1721. P031P113=[G1=(P016+P061+P01+P046+P031==2)+1]==TO)+2+G1+G2+P032+
1722. P032P113+T1
1723. RIMP113=2+G1+G2+SG(IM1,J,K)+P032+P032P113=[G1=(P017+P062+P02+P047+
1724. P032==2)+1]==[G2-1]
1725. TO=G2-1
1726. T1=[G1=(P017+P062+P02+P047+P032==2)+1]==TO
1727. RJP113=[SG(I,J,K)]*(2+G1+G2+P032+P032P113+T1)*S+2+G1+G2+P031+
1728. P031P113=[G1=(P016+P061+P01+P046+P031==2)+1]==TO)+2+G1+G2+SG(IM1,
1729. J,K)+P032+P032P113+T1+2+G1+G2+P032+P032P113+T1)/4.0
1730. TO=G2-1
1731. T1=[G1=(P017+P062+P02+P047+P032==2)+1]==TO
1732. RKP113=[SG(I,J,K)]*(2+G1+G2+P032+P032P113+T1)*S+2+G1+G2+P031+
1733. P031P113=[G1=(P016+P061+P01+P046+P031==2)+1]==TO)+2+G1+G2+SG(IM1,
1734. J,K)+P032+P032P113+T1+2+G1+G2+P032+P032P113+T1)/4.0
1735. TO=G2-1
1736. T1=[G1=(P017+P062+P02+P047+P032==2)+1]==TO
1737. RJP113=[SG(I,J,K)]*(2+G1+G2+P032+P032P113+T1)*S+2+G1+G2+P031+
1738. P031P113=[G1=(P016+P061+P01+P046+P031==2)+1]==TO)+2+G1+G2+SG(IM1,
1739. J,K)+P032+P032P113+T1+2+G1+G2+P032+P032P113+T1)/4.0
1740. TO=G2-1
1741. T1=[G1=(P017+P062+P02+P047+P032==2)+1]==TO
1742. T2=[G1=(P029+P074+P014+P059+P044==2)+1]==TO
1743. T3=[P029+P074P113+P029P113+P074+P014+P059P113+P014P113+P059+2+P044+
1744. P044P113
1745. RKPP113=[SG(I,J,KP1)]*(G1+G2+T2+T3)*S+G1+G2=[G1=(P028+P073+P013+P058
1746. +P043==2)+1]==TO)+P028+P073P113+P028P113+P073+P013+P058P113+
1747. P013P113+P058+2+P043+P043P113)+SG(I,J,K)+[2+G1+G2+P032+P032P113+
1748. T1]*S+2+G1+G2+P031+P031P113=[G1=(P016+P061+P01+P046+P031==2)+1]==
1749. TO)+G1+G2+SG(IM1,J,KP1)+T2+T3+G1+G2+T2+T3+2+G1+G2+SG(IM1,J,K)+
1750. P032+P032P113+T1+2+G1+G2+P032+P032P113+T1)/4.0
1751. RESP113=[(P88-P83)*RKPP113+TA33P+2+XIXI(J,I)*OZINF+RKPP113/DZETAC(K
1752. I)]*V2+[(P88+P113)*RKPP113+TA33P+RKPP113+2+XIXI(J,I)*OZINF+
1753. RKPP113/DZETAC(KI)]*V1+S=[RIMP113+TA12M+[(P83+P82-P88-P87)*TAJ2+
1754. P88+P87-P83-P82]*TAJ1]+(P88-P87)*RIMP113+TA11M+2+OZINF+RIMP113/
1755. DXIC(I)]+RJP113+TA12P+[(P84+P83-P88-P88)*TAJ2+P88+P88-P84-P83]*
1756. TAJ1)+S=[RJP113+TA21M+[(P85+P84+P88-P83)*TAI2+P88+P87-P83-
1757. TAI1]+(P88-P83)*RJP113+TA22M)+RJP113+TA21P+[(P84+P83-P88-P88)*
1758. TAI2+P83-P82+P88-P87]*TAI1]+(P83-P88)*RJP113+TA22P+(P88-P88)*
1759. RJP113+TA11P+2+OZINF+RJP113/DXIC(I)]
1760. DER = RESP113
1761.
1762. C P114
1763. ELSEIF [CND[I,J,K,KP1]] THEN
1764. P013P114 = DX11(I)
1765. P028P114 = [-AJ2(J)+AJ1(J)]/2.0
1766. P031P114 = A2K(K)/2.0
1767. P043P114 = [-A2K(KP1)+A1K(KP1)]/2.0
1768. P058P114 = [-AJ2(J)+AJ1(J)]*XIYIP(J,I)/2.0+DX11(I)*A11R(J,I)
1769. P073P114 = DX11(I)*XIYIP(J,I)*[-AJ2(J)+AJ1(J)]/2.0
1770. RIPP114=2+G1+G2+SG(I,J,K)+P031+P031P114=[G1=(P016+P061+P01+P046+
1771. P031==2)+1]==[G2-1]
1772. RJP114+G1+G2+SG(I,J,K)+P031+P031P114=[G1=(P016+P061+P01+P046+P031
1773. ==2)+1]==[G2-1]/2.0
1774. RKP114+G1+G2+SG(I,J,K)+P031+P031P114=[G1=(P016+P061+P01+P046+P031
1775. ==2)+1]==[G2-1]/2.0
1776. RJP114+G1+G2+SG(I,J,K)+P031+P031P114=[G1=(P016+P061+P01+P046+P031
1777. ==2)+1]==[G2-1]/2.0
1778. TO=G2-1
1779. RKPP114=[G1+G2+SG(I,J,KP1)]*(G1=(P028+P073+P013+P058+P043==2)+1]==
1780. TO)+P028+P073P114+P028P114+P073+P013+P058P114+P013P114+P058+2+
1781. P043+P043P114)+2+G1+G2+SG(I,J,K)+P031+P031P114=[G1=(P016+P061+P01
1782. +P046+P031==2)+1]==TO)/4.0
1783. RESP114=[(P88-P83)*RKPP114+TA33M+2+XIXI(J,I)*OZINF+RKPP114/DZETAC(K
1784. I)]*V2+[(P88+P113)*RKPP114+TA33P+2+XIXI(J,I)*OZINF+RKPP114/
1785. DZETAC(KI)]*V1+RJP114+TA12P+[(P84+P83-P88-P88)*TAJ2+P88+P88-P84-
1786. P83]*TAJ1)+S=[RJP114+TA21M+[(P85+P84+P88-P83)*TAI2+P88+P87-P83-
1787. TAI1]+(P88-P83)*RJP114+TA22M)+RJP114+TA21P+[(P84+P83-P88-P88)*
1788. TAI2+P83-P82+P88-P87]*TAI1]+(P83-P88)*RJP114+TA22P+(P88-
1789. P88)*RJP114+TA11P+2+OZINF+RJP114/DXIC(I)]
1790. DER = RESP114
1791.
1792. C P116
1793. ELSEIF [CND[I,J,K,IM2,JP1,KP1]] THEN
1794. P030P116 = AJ2(J)/2.0
1795. P042P116 = A2K(K)/2.0
1796. P060P116 = AJ2(J)*XIYIP(J,IM2)/2.0
1797. P075P116 = AJ2(J)/2.0
1798. TO=[G1=(P027+P072+P012+P057+P042==2)+1]==[G2-1]
1799. RJP116=[2+G1+G2+SG(IM1,JP1,K)+P042+P042P116+TO]*S+2+G1+G2+P042+
1800. P042P116+TO)/4.0
1801. TO=[G1=(P030+P075+P015+P060+P045==2)+1]==[G2-1]
1802. T1=[P030+P075P116+P030P116+P075+P015+P060P116
1803. +P060P116=[G1+G2+SG(IM1,J,KP1)]*TO+T1]*S+G1+G2+TO+T1)/4.0
1804. RESP116=[(P88+P113)*RKPP116+TA33P+2+XIXI(J,I)*OZINF+RKPP116/
1805. DZETAC(KI)]*V1+RJP116+TA12P+[(P84+P83-P88-P88)*TAI2+P83-P82+P88-
1806. P87]*TAI1]+(P83-P88)*RJP116+TA22P
1807. DER = RESP116
1808.
1809. C P117
1810. ELSEIF [CND[I,J,K,IM1,JP1,KP1]] THEN
1811. P029P117 = AJ2(J)/2.0
1812. P030P117 = AJ2(J)/2.0
1813. P041P117 = A2K(K)/2.0
1814. P042P117 = A2K(K)/2.0
1815. P059P117 = AJ2(J)*XIYIP(J,IM1)/2.0
1816. P060P117 = AJ2(J)*XIYIP(J,IM2)/2.0
1817. P074P117 = AJ2(J)/2.0
1818. P075P117 = AJ2(J)/2.0
1819. TO=G2-1
1820. T1=[G1=(P028+P071+P011+P058+P041==2)+1]==TO
1821. T2=2+G1+G2+P041+P041P117+T1
1822. T3=[G1=(P027+P072+P012+P057+P042==2)+1]==TO
1823. RJP117=[SG(IM1,JP1,K)]*(2+G1+G2+P042+P042P117+T3)*S+2+G1+G2+SG(
1824. I,JP1,K)+P041+P041P117+T1+2+G1+G2+P042+P042P117+T3+T2)/4.0
1825. TO=G2-1
1826. T1=[G1=(P029+P074+P014+P059+P044==2)+1]==TO
1827. T2=[P029+P074P117+P029P117+P074+P014+P059P117
1828. +P059P117=[G1+G2+T1+T2
1829. T4=[G1=(P030+P075+P015+P060+P045==2)+1]==TO
1830. T5=[P030+P075P117+P030P117+P075+P015+P060P117
1831. +P060P117=[G1+G2+T4+T5+T3)+G1+G2+SG(I,J,KP1)]*T1+T2+
1832. S+G1+G2+T4+T5+T3)/4.0
1833. RESP117=[(P88+P113)*RKPP117+TA33P+2+XIXI(J,I)*OZINF+RKPP117/
1834. DZETAC(KI)]*V1+RJP117+TA21P+[(P84+P83-P88-P88)*TAI2+P83-P82+P88-
1835. P87]*TAI1]+(P83-P88)*RJP117+TA22P
1836. DER = RESP117
1837.
1838. C P118
1839. ELSEIF [CND[I,J,K,I,JP1,KP1]] THEN
1840. P028P118 = AJ2(J)/2.0
1841. P029P118 = AJ2(J)/2.0
1842. P040P118 = A2K(K)/2.0
1843. P041P118 = A2K(K)/2.0
1844. P058P118 = AJ2(J)*XIYIP(J,I)/2.0
1845. P059P118 = AJ2(J)*XIYIP(J,IM1)/2.0
1846. P073P118 = AJ2(J)/2.0
1847. P074P118 = AJ2(J)/2.0
1848. TO=G2-1
1849. T1=[G1=(P028+P071+P011+P058+P041==2)+1]==TO
1850. RJP118=[SG(I,JP1,K)]*(2+G1+G2+P041+P041P118+T1)*S+2+G1+G2+P040+
1851. P040P118=[G1=(P029+P070+P010+P059+P040==2)+1]==TO)+2+G1+G2+SG(IM1

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1848.      ,JP1,K)=P041*P041P118*T1+2*G1*G2*P041*P041P118*T1/4.0
1849.      TO*G2-1
1850.      T1=[G1=[P028*P074*P014*P058*P044**2)+1]==TO
1851.      T2=[P028*P074P118*P028P118*P074*P014*P058P118
1852.      RKPP118=[SG(I,J,KP1)=[G1*G2*T1+T2]*S*G1*G2*[(P028*P073*P013*P058
1853.      *P043**2)+1]==TO*[(P028*P073P118*P028P118*P073*P013*P058P118)]+G1*
1854.      G2*SG(IM1,J,KP1)=T1*T2*G1*G2*T1+T2/4.0
1855.      RESP118=[(-P88*P113)=RKPP118*TA33P+2*XIXI(J,I)=QZINF*RKPP118/
1856.      DZETAC(K)]=V1+RJPP118*TA21P=[(P84*P93*P89-P88)=TA12*[(P93*P92*P88-
1857.      P87)*TA11]+(P93*P88)=RJPP118*TA22P
1858.      DER = RESP118
1859.
1860. C P119
1861.      ELSEIF (CND(I1,JJ,KK,IP1,JP1,KP1)) THEN
1862.      P028P119 = AJ2(J)/2.0
1863.      P040P119 = A2K(K)/2.0
1864.      P058P119 = AJ2(J)=XIIYIP(J,I)/2.0
1865.      P073P119 = AJ2(J)/2.0
1866.      RJPP119=G1*G2*SG(I,JP1,K)+P040*P040P119=[G1=(P028*P070*P010*P055*
1867.      P040**2)+1]==(G2-1)/2.0
1868.      RKPP119=G1*G2*SG(I,J,KP1)=[G1=(P028*P073*P013*P058*P043**2)+1]==[
1869.      G2-1)=(P028*P073P119*P028P119*P073*P013*P058P119)/4.0
1870.      RESP119=[(-P88*P113)=RKPP119*TA33P+2*XIXI(J,I)=QZINF*RKPP119/
1871.      DZETAC(K)]=V1+RJPP119*TA21P=[(P84*P93*P89-P88)=TA12*[(P93*P92*P88-
1872.      P87)*TA11]+(P93*P88)=RJPP119*TA22P
1873.      DER = RESP119
1874.
1875. C P136
1876.      ELSEIF (CND(I1,JJ,KK,IM2,J,KP2)) THEN
1877.      P045P136 = A2K(KP1)/2.0
1878.      TO=[G1=(P030*P078*P015*P060*P045**2)+1]==(G2-1)
1879.      RKPP136=[2*G1*G2*SG(IM1,J,KP1)=P045*P045P136*TO*3+2*G1*G2*P045*
1880.      P045P136*TO)/4.0
1881.      RESP136=[(-P88*P113)=RKPP136*TA33P+2*XIXI(J,I)=QZINF*RKPP136/
1882.      DZETAC(K)]=V1
1883.      DER = RESP136
1884.
1885. C P137
1886.      ELSEIF (CND(I1,JJ,KK,IM1,J,KP2)) THEN
1887.      P044P137 = A2K(KP1)/2.0
1888.      P045P137 = A2K(KP1)/2.0
1889.      TO*G2-1
1890.      T1=[G1=(P028*P074*P014*P058*P044**2)+1]==TO
1891.      T2=2*G1*G2*P044*P044P137*T1
1892.      T3=[G1=(P030*P078*P015*P060*P045**2)+1]==TO
1893.      RKPP137=[SG(IM1,J,KP1)=[2*G1*G2*P045*P045P137*T3+S*T2]+2*G1*G2*SG(
1894.      I,J,KP1)=P044*P044P137*T1+S*2*G1*G2*P045*P045P137*T3+T2)/4.0
1895.      RESP137=[(-P88*P113)=RKPP137*TA33P+2*XIXI(J,I)=QZINF*RKPP137/
1896.      DZETAC(K)]=V1
1897.      DER = RESP137
1898.
1899. C P138
1900.      ELSEIF (CND(I1,JJ,KK,I,J,KP2)) THEN
1901.      P043P138 = A2K(KP1)/2.0
1902.      P044P138 = A2K(KP1)/2.0
1903.      TO*G2-1
1904.      T1=[G1=(P028*P074*P014*P058*P044**2)+1]==TO
1905.      RKPP138=[SG(I,J,KP1)=[2*G1*G2*P044*P044P138*T1*S+2*G1*G2*P043*
1906.      P043P138=[G1=(P028*P073*P013*P058*P043**2)+1]==TO)+2*G1*G2*SG(IM1
1907.      ,J,KP1)=P044*P044P138*T1+2*G1*G2*P044*P044P138*T1)/4.0
1908.      RESP138=[(-P88*P113)=RKPP138*TA33P+2*XIXI(J,I)=QZINF*RKPP138/
1909.      DZETAC(K)]=V1
1910.      DER = RESP138
1911.
1912. C P139
1913.      ELSEIF (CND(I1,JJ,KK,IP1,J,KP2)) THEN
1914.      P043P139 = A2K(KP1)/2.0
1915.      RKPP139=G1*G2*SG(I,J,KP1)=P043*P043P139=[G1=(P028*P073*P013*P058*
1916.      P043**2)+1]==(G2-1)/2.0
1917.      RESP139=[(-P88*P113)=RKPP139*TA33P+2*XIXI(J,I)=QZINF*RKPP139/
1918.      DZETAC(K)]=V1
1919.      DER = RESP139
1920.      ENDIF
1921.
1922. C
1923.      RETURN
1924.      END
1925.      SUBROUTINE R1(J,I,K,JJ,II,KK,DAN)
1926.      RMDER1.FOR
1927.
1928. C
1929.      INCLUDE (INTRO)
1930.
1931. C
1932.      P
1933.
1934. C
1935.      P81 = P(JM1,K,IM2)
1936.      P82 = P(JM1,K,IM1)
1937.      P83 = P(JM1,K,I)
1938.      P84 = P(JM1,K,IP1)
1939.      P85 = P(J,K,IM2)
1940.      P86 = P(J,K,IM1)
1941.      P87 = P(J,K,I)
1942.      P88 = P(J,K,IP1)
1943.      P89 = P(J,K,IP1)
1944.      P91 = P(JP1,K,IM2)
1945.      P92 = P(JP1,K,IM1)
1946.      P93 = P(JP1,K,I)
1947.      P94 = P(JP1,K,IP1)
1948.      P106 = P(JM1,KP1,IM2)
1949.      P107 = P(JM1,KP1,IM1)
1950.      P108 = P(JM1,KP1,I)
1951.      P109 = P(JM1,KP1,IP1)
1952.      P111 = P(J,KP1,IM2)
1953.      P112 = P(J,KP1,IM1)
1954.      P113 = P(J,KP1,I)
1955.      P114 = P(J,KP1,IP1)
1956.      P116 = P(JP1,KP1,IM2)
1957.      P117 = P(JP1,KP1,IM1)
1958.      P118 = P(JP1,KP1,I)
1959.      P119 = P(JP1,KP1,IP1)
1960.      P123 = P(JM1,KP2,I)
1961.      P126 = P(J,KP2,IM2)
1962.      P127 = P(J,KP2,IM1)
1963.      P128 = P(J,KP2,I)
1964.      P129 = P(J,KP2,IP1)
1965.      P143 = P(JP1,KP2,I)
1966.      P161 = P(J,K+3,IM2)
1967.      P162 = P(J,K+3,IM1)
1968.      P163 = P(J,K+3,I)
1969.      P184 = P(J,K+3,IP1)
1970.
1971. C
1972.      PA
1973.
1974. C
1975.      PA1 = DXII(I)=[(P88*S+P88)*QZINF/XIXIP(J,I)
1976.      PA2 = DXII(IM1)=[(P87*S+P88)*QZINF/XIXIP(J,IM1)
1977.      PA3 = DXII(IM2)=[(P86*S+P87)*QZINF/XIXIP(J,IM2)
1978.      PA13 = DXII(I)=[(P113*S+P114)*QZINF/XIXIP(J,I)
1979.      PA14 = DXII(IM1)=[(P112*S+P113)*QZINF/XIXIP(J,IM1)
1980.      PA15 = DXII(IM2)=[(P111*S+P112)*QZINF/XIXIP(J,IM2)
1981.      PA16 = XIIYIP(J,I)*QZINF*S/XIXIP(J,I)+[AJ2(J)=(P94*P93*P89-P88)+AJ1
1982.      (J)=(P89*P88*P84-P83)]/2.0
1983.      PA17 = XIIYIP(J,IM1)*QZINF*S/XIXIP(J,IM1)+[AJ2(J)=(P93*P92*P88-P87)
1984.      +AJ1(J)=(P88*P87*P83-P82)]/2.0
1985.      PA18 = XIIYIP(J,IM2)*QZINF*S/XIXIP(J,IM2)+[AJ2(J)=(P92*P91*P87-P86)
1986.      +AJ1(J)=(P87*P86*P82-P81)]/2.0
1987.      PA28 = XIIYIP(J,I)*QZINF*S/XIXIP(J,I)+[AJ2(J)=(P119*P118*P114-P113)
1988.      +AJ1(J)=(P114*P113*P109-P108)]/2.0
1989.      PA29 = XIIYIP(J,IM1)*QZINF*S/XIXIP(J,IM1)+[AJ2(J)=(P118*P117*P113-
1990.      P112)+AJ1(J)=(P113*P112*P108-P107)]/2.0
1991.      PA30 = XIIYIP(J,IM2)*QZINF*S/XIXIP(J,IM2)+[AJ2(J)=(P117*P116*P112-

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1920. P111:=AJ1(J):=[P112+P111-P107-P106]]/2.0
1921. PA31:=OZINF+(DC1+P88+DC1-P88-DC3+P139+DC3+P138+DC2+P114+DC2+P113)
1922. /2.0
1923. PA32:=OZINF+(DC1+P88+DC1-P87-DC3+P138+DC3+P137+DC2+P113+DC2+P112)
1924. /2.0
1925. PA33:=OZINF+(DC1+P87+DC1-P86-DC3+P137+DC3+P136+DC2+P112+DC2+P111)
1926. /2.0
1927. PA43:=OZINF+(DC3+P184+DC3+P183+DC2+P139+DC2+P138+DC1+P114+DC1+
1928. P113)/2.0
1929. PA44:=OZINF+(DC3+P183+DC3+P182+DC2+P138+DC2+P137+DC1+P113+DC1+
1930. P112)/2.0
1931. PA45:=OZINF+(DC3+P182+DC3+P181+DC2+P137+DC2+P136+DC1+P112+DC1+
1932. P111)/2.0
1933. PA46:=A11R(J,I):=[DXII(I):=[P88+S+P89]+OZINF/XIXIP(J,I))+XIIYIP(J,I)
1934. +XIIYIP(J,I)+OZINF+S/XIXIP(J,I)+[AJ2(J):=[P94+P93-P89-P88]+AJ1(J):
1935. [P89+P88-P84-P83]]/2.0
1936. PA47:=A11R(J,IM1):=[DXII(IM1):=[P87+S+P88]+OZINF/XIXIP(J,IM1))+
1937. XIIYIP(J,IM1)+XIIYIP(J,IM1)+OZINF+S/XIXIP(J,IM1)+[AJ2(J):=[P93+P92-
1938. P88-P87]+AJ1(J):=[P88+P87+P83-P82]]/2.0
1939. PA48:=A11R(J,IM2):=[DXII(IM2):=[P86+S+P87]+OZINF/XIXIP(J,IM2))+
1940. XIIYIP(J,IM2)+XIIYIP(J,IM2)+OZINF+S/XIXIP(J,IM2)+[AJ2(J):=[P92+P91-
1941. P87-P86]+AJ1(J):=[P87+P86-P82-P81]]/2.0
1942. PA58:=A11R(J,I):=[DXII(I):=[P113+S+P114]+OZINF/XIXIP(J,I))+XIIYIP(J,
1943. I)+XIIYIP(J,I)+OZINF+S/XIXIP(J,I)+[AJ2(J):=[P119+P118-P114-P113]+
1944. AJ1(J):=[P114+P113-P109-P108]]/2.0
1945. PA59:=A11R(J,IM1):=[DXII(IM1):=[P112+S+P113]+OZINF/XIXIP(J,IM1))+
1946. XIIYIP(J,IM1)+XIIYIP(J,IM1)+OZINF+S/XIXIP(J,IM1)+[AJ2(J):=[P118+
1947. P117-P113-P112]+AJ1(J):=[P113+P112-P108-P107]]/2.0
1948. PA60:=A11R(J,IM2):=[DXII(IM2):=[P111+S+P112]+OZINF/XIXIP(J,IM2))+
1949. XIIYIP(J,IM2)+XIIYIP(J,IM2)+OZINF+S/XIXIP(J,IM2)+[AJ2(J):=[P117+
1950. P116-P112-P111]+AJ1(J):=[P112+P111-P107-P106]]/2.0
1951. PA61:=XIIYIP(J,I):=[DXII(I):=[P88+S+P89]+OZINF/XIXIP(J,I))+XIIYIP(J,I
1952. ):=[OZINF+S/XIXIP(J,I)+[AJ2(J):=[P94+P93-P89-P88]+AJ1(J):=[P89+P88-
1953. P84-P83]]/2.0
1954. PA62:=XIIYIP(J,IM1):=[DXII(IM1):=[P87+S+P88]+OZINF/XIXIP(J,IM1))+
1955. XIIYIP(J,IM1)+XIIYIP(J,IM1)+OZINF+S/XIXIP(J,IM1)+[AJ2(J):=[P93+P92-P88-P87]+AJ1(J
1956. ):=[P88+P87-P83-P82]]/2.0
1957. PA63:=XIIYIP(J,IM2):=[DXII(IM2):=[P86+S+P87]+OZINF/XIXIP(J,IM2))+
1958. XIIYIP(J,IM2)+XIIYIP(J,IM2)+OZINF+S/XIXIP(J,IM2)+[AJ2(J):=[P92+P91-P87-P86]+AJ1(J
1959. ):=[P87+P86-P82-P81]]/2.0
1960. PA73:=XIIYIP(J,I):=[DXII(I):=[P113+S+P114]+OZINF/XIXIP(J,I))+XIIYIP(J
1961. I):=[OZINF+S/XIXIP(J,I)+[AJ2(J):=[P119+P118-P114-P113]+AJ1(J):=[P114
1962. +P113-P108-P108]]/2.0
1963. PA74:=XIIYIP(J,IM1):=[DXII(IM1):=[P112+S+P113]+OZINF/XIXIP(J,IM1))+
1964. XIIYIP(J,IM1)+XIIYIP(J,IM1)+OZINF+S/XIXIP(J,IM1)+[AJ2(J):=[P118+P117-P113-P112]+
1965. AJ1(J):=[P113+P112-P108-P107]]/2.0
1966. PA75:=XIIYIP(J,IM2):=[DXII(IM2):=[P111+S+P112]+OZINF/XIXIP(J,IM2))+
1967. XIIYIP(J,IM2)+XIIYIP(J,IM2)+OZINF+S/XIXIP(J,IM2)+[AJ2(J):=[P117+P116-P112-P111]+
1968. AJ1(J):=[P112+P111-P107-P106]]/2.0
1969.
1970. C
1971. R1K,DPU
1972. C
1973. TO:=[G1:=[PA17+PA62+PA2+PA47+PA32==2]+1]==G2
1974. T1:=[G1:=[PA18+PA63+PA3+PA48+PA33==2]+1]==G2
1975. T2:=[G1:=[PA29+PA74+PA14+PA59+PA44==2]+1]==G2
1976. T3:=[G1:=[PA30+PA75+PA15+PA60+PA45==2]+1]==G2
1977. R1K:=[S:=[SG(IM1,J,KP1):=[T3+S+T2]+T3]+S:=[SG(I,J,KP1):=[T2+S+G1:=[PA28
1978. +PA73+PA13+PA58+PA43==2]+1]==G2]+T2]+3:=[SG(IM1,J,K):=[T1+S+T0]+T1)
1979. +3:=[SG(I,J,K):=[T0+S+G1:=[PA18+PA61+PA1+PA46+PA31==2]+1]==G2]+T0)]
1980. /4.0
1981. DDPU=DPU(J,I)
1982. C
1983. DER1
1984. C
1985. C P81
1986. IF [CND(I,J,K,IM2,IM1,K)] THEN
1987. PA18P81:=[(1.0/2.0+AJ1(J))]
1988. PA48P81:=[(1.0/2.0+AJ1(J))+XIIYIP(J,IM2)]
1989. PA63P81:=[(1.0/2.0+AJ1(J))]
1990. TO:=[G1:=[PA18+PA63+PA3+PA48+PA33==2]+1]==G2-1
1991. T1:PA18+PA63P81+PA18P81+PA63+PA3+PA48P81
1992. R1KP81:3.0/4.0+G1+G2+SG(IM1,J,K)+T0+T1+S+G1+G2+T0+T1
1993. DANP81:S=(DDPU+R1KP81+TA33M+2+XIXI(J,I)+OZINF+R1KP81/DZETAC(K))
1994. DAN:=DANP81
1995. C P82
1996. ELSEIF [CND(I,J,K,IM1,IM1,K)] THEN
1997. PA17P82:=[(1.0/2.0+AJ1(J))]
1998. PA18P82:=[(1.0/2.0+AJ1(J))]
1999. PA47P82:=[(1.0/2.0+AJ1(J))+XIIYIP(J,IM1)]
2000. PA48P82:=[(1.0/2.0+AJ1(J))+XIIYIP(J,IM2)]
2001. PA62P82:=[(1.0/2.0+AJ1(J))]
2002. PA63P82:=[(1.0/2.0+AJ1(J))]
2003. TO:G2-1
2004. T1:=[G1:=[PA17+PA62+PA2+PA47+PA32==2]+1]==TO
2005. T2:PA17+PA62P82+PA17P82+PA62+PA2+PA47P82
2006. T3:G1+G2+T1+T2
2007. T4:=[G1:=[PA18+PA63+PA3+PA48+PA33==2]+1]==TO
2008. T5:PA18+PA63P82+PA18P82+PA63+PA3+PA48P82
2009. R1KP82:3+SG(IM1,J,K)+G1+G2+T4+T5+S+T3+G1+G2+T4+T5]+3+G1+G2+SG
2010. [I,J,K):=[T1+T2+S+T3]]/4.0
2011. DANP82:S=(DDPU+R1KP82+TA33M+2+XIXI(J,I)+OZINF+R1KP82/DZETAC(K))
2012. DAN:=DANP82
2013. C P83
2014. ELSEIF [CND(I,J,K,I,IM1,K)] THEN
2015. PA18P83:=[(1.0/2.0+AJ1(J))]
2016. PA17P83:=[(1.0/2.0+AJ1(J))]
2017. PA48P83:=[(1.0/2.0+AJ1(J))+XIIYIP(J,I)]
2018. PA47P83:=[(1.0/2.0+AJ1(J))+XIIYIP(J,IM1)]
2019. PA61P83:=[(1.0/2.0+AJ1(J))]
2020. PA62P83:=[(1.0/2.0+AJ1(J))]
2021. TO:G2-1
2022. T1:=[G1:=[PA17+PA62+PA2+PA47+PA32==2]+1]==TO
2023. T2:PA17+PA62P83+PA17P83+PA62+PA2+PA47P83
2024. R1KP83:3+SG(I,J,K)+G1+G2+T1+T2+S+G1+G2+G1:=[PA16+PA61+PA1+PA46+
2025. PA31==2]+1]==TO+PA18+PA61P83+PA18P83+PA61+PA1+PA46P84]+G1+G2+T1
2026. +T2]+3+G1+G2+SG(IM1,J,K)+T1+T2]/4.0
2027. DDPUP83:DZETAC(KLOW)=[(CC1+DDZKX+XIXY(J,I)+S+TAJ1+CC1+DDZYU+S+TAJ1)
2028. DANP83+S=(DDPU+R1KP83+TA33M+DDPU+P83+R1K+TA33M+2+XIXI(J,I)+OZINF+
2029. R1KP83/DZETAC(K))
2030. DAN:=DANP83
2031. C P84
2032. ELSEIF [CND(I,J,K,I,P1,IM1,K)] THEN
2033. PA16P84:=[(1.0/2.0+AJ1(J))]
2034. PA46P84:=[(1.0/2.0+AJ1(J))+XIIYIP(J,I)]
2035. PA61P84:=[(1.0/2.0+AJ1(J))]
2036. R1KP84:3.0/4.0+G1+G2+SG(I,J,K)+G1:=[PA18+PA61+PA1+PA46+PA31==2]+1]
2037. +G1+G2+G1:=[PA16+PA61P84+PA16P84+PA61+PA1+PA46P84]
2038. DANP84:S=(DDPU+R1KP84+TA33M+2+XIXI(J,I)+OZINF+R1KP84/DZETAC(K))
2039. DAN:=DANP84
2040. C P85
2041. ELSEIF [CND(I,J,K,IM2,J,K)] THEN
2042. PA3P85:=DXII(IM2)+S
2043. PA18P85:=[-AJ2(J)+AJ1(J)]/2.0
2044. PA33P85:=DC1/2.0
2045. PA48P85:=DXII(IM2)+A11R(J,IM2)+S+[-AJ2(J)+AJ1(J)]+XIIYIP(J,IM2)/
2046. 2.0
2047. PA63P85:=DXII(IM2)+XIIYIP(J,IM2)+S+[-AJ2(J)+AJ1(J)]/2.0
2048. TO:=[G1:=[PA18+PA63+PA3+PA48+PA33==2]+1]==G2-1
2049. T1:PA18+PA63P85+PA18P85+PA63+PA3+PA48P85+PA33P85+PA48+2+PA33+
2050. PA33P85
2051. R1KP85:3.0/4.0+G1+G2+SG(IM1,J,K)+T0+T1+S+G1+G2+T0+T1
2052. DANP85:S=(DDPU+R1KP85+TA33M+2+XIXI(J,I)+OZINF+R1KP85/DZETAC(K))
2053. DAN:=DANP85

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2112. C P87
2113. ELSEIF (CND(I1,JJ,KK,IM1,J,K)) THEN
2114. PA2P87 = DXII(IM1)=S
2115. PA3P87 = DXII(IM2)
2116. PA17P87 = [-AJ2(J)+AJ1(J)]/2.0
2117. PA18P87 = [-AJ2(J)+AJ1(J)]/2.0
2118. PA32P87 = DC1/2.0
2119. PA33P87 = DC1/2.0
2120. PA47P87 = DXII(IM1)=A11R(J,IM1)=S+[-AJ2(J)+AJ1(J)]=XIYIP(J,IM1)/
2121. 2.0
2122. PA48P87 = [-AJ2(J)+AJ1(J)]=XIYIP(J,IM2)/2.0+DXII(IM2)=A11R(J,IM2)
2123. PA82P87 = DXII(IM1)=XIYIP(J,IM1)+S+[-AJ2(J)+AJ1(J)]/2.0
2124. PA83P87 = DXII(IM2)=XIYIP(J,IM2)+[-AJ2(J)+AJ1(J)]/2.0
2125. TO=G2-1
2126. T1=(G1=(PA17+PA82+PA2+PA47+PA32==2)+1)==TO
2127. T2=PA17+PA82P87+PA17P87+PA82+PA2+PA47P87+PA2P87+PA47+2+PA32+
2128. PA32P87
2129. T3=G1+G2+T1+T2
2130. T4=(G1=(PA18+PA83+PA3+PA48+PA33==2)+1)==TO
2131. T5=PA18+PA83P87+PA18P87+PA83+PA3+PA48P87+PA3P87+PA48+2+PA33+
2132. PA33P87
2133. R1KP87=[3=(SG(IM1,J,K)=(G1+G2+T1+T2+S+G1+G2+T4+T5=S+T3)+G1+G2+T4+T5)+3=(G1+G2=SG
2134. (I,J,K)=T1+T2+S+T3)]/4.0
2135. TO=XIYX(J,I)
2136. DDPUP87=DZETA(KLOW)=(CC1=DDZXU={TO==2+XIXX(J,I)==2}=S+TA11+CC1+
2137. DDZYU=TO+S+TA11)
2138. DANP87=S={DDPU=R1KP87+TA33M+DDPUP87=R1K+TA33M+2=XIXXI(J,I)=QZINF+
2139. R1KP87/DZETAC(K)}
2140. DAN = DANP87
2141. C P88
2142. ELSEIF (CND(I1,JJ,KK,I,J,K)) THEN
2143. PA1P88 = DXII(I)=S
2144. PA2P88 = DXII(IM1)
2145. PA18P88 = [-AJ2(J)+AJ1(J)]/2.0
2146. PA17P88 = [-AJ2(J)+AJ1(J)]/2.0
2147. PA31P88 = DC1/2.0
2148. PA32P88 = DC1/2.0
2149. PA48P88 = DXII(I)=A11R(J,I)=S+[-AJ2(J)+AJ1(J)]=XIYIP(J,I)/2.0
2150. PA47P88 = [-AJ2(J)+AJ1(J)]=XIYIP(J,IM1)/2.0+DXII(IM1)=A11R(J,IM1)
2151. PA81P88 = DXII(I)=XIYIP(J,I)=S+[-AJ2(J)+AJ1(J)]/2.0
2152. PA82P88 = DXII(IM1)=XIYIP(J,IM1)+[-AJ2(J)+AJ1(J)]/2.0
2153. TO=G2-1
2154. T1=(G1=(PA17+PA82+PA2+PA47+PA32==2)+1)==TO
2155. T2=PA17+PA82P88+PA17P88+PA82+PA2+PA47P88+PA2P88+PA47+2+PA32+
2156. PA32P88
2157. R1KP88=[3=(SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2+T4+T5=S+T3)+G1+G2+T4+T5)+3=(G1+G2=SG
2158. (I,J,K)=T1+T2+S+T3)+3=(G1+G2=SG(IM1,J,K)=T1+T2)/4.0
2159. TO=XIYX(J,I)
2160. T1=CC1=S+TA12+CC1+TA11
2161. T2=CC1+TAJ1
2162. T3=CC1+S+TAJ2
2163. DDPUP88=DZETA(KLOW)=(DDZXU={TO=(T3+T2)+{TO==2+XIXX(J,I)==2}=T1)+
2164. DDZYU={T3+T2+TO+T1})
2165. DANP88=S={DDPU=R1KP88+TA33M+DDPUP88=R1K+TA33M+2=XIXXI(J,I)=QZINF+
2166. R1KP88/DZETAC(K)}
2167. DAN = DANP88
2168. C P89
2169. ELSEIF (CND(I1,JJ,KK,IP1,J,K)) THEN
2170. PA1P89 = DXII(I)
2171. PA18P89 = [-AJ2(J)+AJ1(J)]/2.0
2172. PA31P89 = DC1/2.0
2173. PA48P89 = [-AJ2(J)+AJ1(J)]=XIYIP(J,I)/2.0+DXII(I)=A11R(J,I)
2174. PA81P89 = DXII(I)=XIYIP(J,I)+[-AJ2(J)+AJ1(J)]/2.0
2175. R1KP89=[3.0/4.0+G1+G2+SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2+T4+T5=S+T3)+G1+G2+T4+T5)+3=(G1+G2=SG
2176. (I,J,K)=T1+T2+S+T3)+3=(G1+G2=SG(IM1,J,K)=T1+T2)/4.0
2177. TO=XIYX(J,I)
2178. DDPUP89=DZETA(KLOW)=(CC1=DDZXU={TO==2+XIXX(J,I)==2}=TA12+CC1=DDZYU
2179. +TO+TA12)
2180. DANP89=S={DDPU=R1KP89+TA33M+DDPUP89=R1K+TA33M+2=XIXXI(J,I)=QZINF+
2181. R1KP89/DZETAC(K)}
2182. DAN = DANP89
2183. C P91
2184. ELSEIF (CND(I1,JJ,KK,IM2,JP1,K)) THEN
2185. PA18P91 = AJ2(J)/2.0
2186. PA48P91 = AJ2(J)=XIYIP(J,IM2)/2.0
2187. PA83P91 = AJ2(J)/2.0
2188. TO=(G1=(PA18+PA83+PA3+PA48+PA33==2)+1)==(G2-1)
2189. T1=PA18+PA83P91+PA18P91+PA83+PA3+PA48P91
2190. R1KP91=[3.0/4.0+G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2=TO+T1]
2191. DANP91=S={DDPU=R1KP91+TA33M+2=XIXXI(J,I)=QZINF+R1KP91/DZETAC(K)}
2192. DAN = DANP91
2193. C P92
2194. ELSEIF (CND(I1,JJ,KK,IM1,JP1,K)) THEN
2195. PA17P92 = AJ2(J)/2.0
2196. PA18P92 = AJ2(J)/2.0
2197. PA47P92 = AJ2(J)=XIYIP(J,IM1)/2.0
2198. PA48P92 = AJ2(J)=XIYIP(J,IM2)/2.0
2199. PA82P92 = AJ2(J)/2.0
2200. PA83P92 = AJ2(J)/2.0
2201. TO=G2-1
2202. T1=(G1=(PA17+PA82+PA2+PA47+PA32==2)+1)==TO
2203. T2=PA17+PA82P92+PA17P92+PA82+PA2+PA47P92
2204. T3=G1+G2+T1+T2
2205. T4=(G1=(PA18+PA83+PA3+PA48+PA33==2)+1)==TO
2206. T5=PA18+PA83P92+PA18P92+PA83+PA3+PA48P92
2207. R1KP92=[3=(SG(IM1,J,K)=(G1+G2+T4+T5=S+T3)+G1+G2+T4+T5)+3=(G1+G2=SG
2208. (I,J,K)=T1+T2+S+T3)]/4.0
2209. DANP92=S={DDPU=R1KP92+TA33M+2=XIXXI(J,I)=QZINF+R1KP92/DZETAC(K)}
2210. DAN = DANP92
2211. C P93
2212. ELSEIF (CND(I1,JJ,KK,I,JP1,K)) THEN
2213. PA18P93 = AJ2(J)/2.0
2214. PA17P93 = AJ2(J)/2.0
2215. PA48P93 = AJ2(J)=XIYIP(J,I)/2.0
2216. PA47P93 = AJ2(J)=XIYIP(J,IM1)/2.0
2217. PA81P93 = AJ2(J)/2.0
2218. PA82P93 = AJ2(J)/2.0
2219. TO=G2-1
2220. T1=(G1=(PA17+PA82+PA2+PA47+PA32==2)+1)==TO
2221. T2=PA17+PA82P93+PA17P93+PA82+PA2+PA47P93
2222. R1KP93=[3=(SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2+T4+T5=S+T3)+G1+G2+T4+T5)+3=(G1+G2=SG
2223. (I,J,K)=T1+T2+S+T3)+3=(G1+G2=SG(IM1,J,K)=T1+T2)/4.0
2224. TO=XIYX(J,I)
2225. DDPUP93=DZETA(KLOW)=(CC1=DDZXU=XIYX(J,I)=TAJ2+CC1=DDZYU+TAJ2)
2226. DANP93=S={DDPU=R1KP93+TA33M+DDPUP93=R1K+TA33M+2=XIXXI(J,I)=QZINF+
2227. R1KP93/DZETAC(K)}
2228. DAN = DANP93
2229. C P94
2230. ELSEIF (CND(I1,JJ,KK,IP1,JP1,K)) THEN
2231. PA18P94 = AJ2(J)/2.0
2232. PA48P94 = AJ2(J)=XIYIP(J,I)/2.0
2233. PA81P94 = AJ2(J)/2.0
2234. R1KP94=[3.0/4.0+G1+G2+SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2+T4+T5=S+T3)+G1+G2+T4+T5)+3=(G1+G2=SG
2235. (I,J,K)=T1+T2+S+T3)+3=(G1+G2=SG(IM1,J,K)=T1+T2)/4.0
2236. TO=XIYX(J,I)
2237. DDPUP94=DZETA(KLOW)=(CC1=DDZXU=XIYX(J,I)=TAJ2+CC1=DDZYU+TAJ2)
2238. DANP94=S={DDPU=R1KP94+TA33M+2=XIXXI(J,I)=QZINF+R1KP94/DZETAC(K)}
2239. DAN = DANP94
2240. C P105
2241. ELSEIF (CND(I1,JJ,KK,IM2,JM1,KP1)) THEN
2242. PA30P105 = -[1.0/2.0+AJ1(J)]
2243. PA80P105 = -[1.0/2.0+AJ1(J)=XIYIP(J,IM2)]

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2244. PA75P106 = -(1.0/2.0*AJ1(J))
2245. TO=(G1*(PA30*PA75+PA15*PA80+PA45**2)+1)**(G2-1)
2246. T1=PA30*PA75P106+PA30P106*PA75+PA15*PA80P106
2247. R1KP106S=(G1*G2*SG(IM1,J,KP1))/TO*T1*S=G1*G2*TO*T1/4.0
2248. DANP106S=(DDPU=R1KP106*TA33M+2*XIXI(J,I)=QZINF=R1KP106/DZETAC(K)
2249. )
2250. DAN = DANP106
2251. C P107
2252. ELSEIF (CND(I,J,KK,IM1,KP1)) THEN
2253. PA29P107 = -(1.0/2.0*AJ1(J))
2254. PA30P107 = -(1.0/2.0*AJ1(J))
2255. PA59P107 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
2256. PA80P107 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM2))
2257. PA74P107 = -(1.0/2.0*AJ1(J))
2258. PA75P107 = -(1.0/2.0*AJ1(J))
2259. TO=G2-1
2260. T1=(G1*(PA29*PA74+PA14*PA59+PA44**2)+1)**TO
2261. T2=PA29*PA74P107+PA29P107*PA74+PA14*PA59P107
2262. T3=G1*G2*T1=T2
2263. T4=(G1*(PA30*PA75+PA15*PA80+PA45**2)+1)**TO
2264. T5=PA30*PA75P107+PA30P107*PA75+PA15*PA80P107
2265. R1KP107S=(S*(SG(IM1,J,KP1))=(G1*G2*T4*T5+S*T3)+G1*G2*T4*T5)+S=(G1*G2
2266. *SG(I,J,KP1))/T1*T2*S*T3)/4.0
2267. DANP107S=(DDPU=R1KP107*TA33M+2*XIXI(J,I)=QZINF=R1KP107/DZETAC(K)
2268. )
2269. DAN = DANP107
2270. C P108
2271. ELSEIF (CND(I,J,KK,I,IM1,KP1)) THEN
2272. PA24P108 = -(1.0/2.0*AJ1(J))
2273. PA25P108 = -(1.0/2.0*AJ1(J))
2274. PA58P108 = -(1.0/2.0*AJ1(J)*XIYIP(J,I))
2275. PA59P108 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
2276. PA73P108 = -(1.0/2.0*AJ1(J))
2277. PA74P108 = -(1.0/2.0*AJ1(J))
2278. TO=G2-1
2279. T1=(G1*(PA29*PA74+PA14*PA59+PA44**2)+1)**TO
2280. T2=PA29*PA74P108+PA29P108*PA74+PA14*PA59P108
2281. R1KP108S=(S*(SG(I,J,KP1))=(G1*G2*T1=T2=S+G1*G2*(G1*(PA28*PA73+PA13
2282. *PA58+PA43**2)+1)**TO*(PA28*PA73P108+PA28P108*PA73+PA13*PA58P108)
2283. +G1*G2*T1=T2)+G1*G2*SG(IM1,J,KP1))/T1*T2*S)/4.0
2284. TO=S**2
2285. DDPU108=DZETA(KLOW)=(CC2=DDZHU=XIYX(J,I)=TO*TAJ1=CC2=DDZYU=TO*
2286. TAJ1)
2287. DANP108S=(DDPU=R1KP108*TA33M+DDPU108=R1K=TA33M+2*XIXI(J,I)=
2288. QZINF=R1KP108/DZETAC(K))
2289. DAN = DANP108
2290. C P109
2291. ELSEIF (CND(I,J,KK,I,IM1,KP1)) THEN
2292. PA28P109 = -(1.0/2.0*AJ1(J))
2293. PA58P109 = -(1.0/2.0*AJ1(J)*XIYIP(J,I))
2294. PA73P109 = -(1.0/2.0*AJ1(J))
2295. R1KP109S=(G1*G2*SG(I,J,KP1))=(G1*(PA28*PA73+PA13*PA58+PA43**2)+1)**(
2296. G2-1)=(PA28*PA73P109+PA28P109*PA73+PA13*PA58P109)/S/4.0
2297. DANP109S=(DDPU=R1KP109*TA33M+2*XIXI(J,I)=QZINF=R1KP109/DZETAC(K)
2298. )
2299. DAN = DANP109
2300. C P111
2301. ELSEIF (CND(I,J,KK,IM2,J,KP1)) THEN
2302. PA15P111 = DXI(IM2)*S
2303. PA30P111 = (-AJ2(J)+AJ1(J))/2.0
2304. PA33P111 = DC2/2.0
2305. PA45P111 = DC1/2.0
2306. PA80P111 = DXI(IM2)*A11R(J,IM2)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/
2307. 2.0
2308. PA75P111 = DXI(IM2)*XIYIP(J,IM2)*S+(-AJ2(J)+AJ1(J))/2.0
2309. TO=G2-1
2310. T1=(G1*(PA18*PA63+PA3*PA48+PA33**2)+1)**TO
2311. T2=(G1*(PA30*PA75+PA15*PA80+PA45**2)+1)**TO
2312. T3=PA30*PA75P111+PA30P111*PA75+PA15*PA80P111+PA15P111*PA80+2*PA45*
2313. PA48P111
2314. R1KP111S=(S*(G1*G2*SG(IM1,J,KP1))/T2*T3+S+G1*G2*T2*T3)+3*(2*G1*G2*SG
2315. (IM1,J,K)*PA33*PA33P111)/T1*S+2*G1*G2*PA33*PA33P111)/4.0
2316. DANP111S=(DDPU=R1KP111*TA33M+2*XIXI(J,I)=QZINF=R1KP111/DZETAC(K)
2317. )
2318. DAN = DANP111
2319. C P112
2320. ELSEIF (CND(I,J,KK,IM1,J,KP1)) THEN
2321. PA14P112 = DXI(IM1)*S
2322. PA15P112 = DXI(IM2)
2323. PA28P112 = (-AJ2(J)+AJ1(J))/2.0
2324. PA30P112 = (-AJ2(J)+AJ1(J))/2.0
2325. PA32P112 = DC2/2.0
2326. PA33P112 = DC2/2.0
2327. PA44P112 = DC1/2.0
2328. PA45P112 = DC1/2.0
2329. PA59P112 = DXI(IM1)*A11R(J,IM1)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/
2330. 2.0
2331. PA80P112 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/2.0+DXI(IM2)*A11R(J,IM2)
2332. PA74P112 = DXI(IM1)*XIYIP(J,IM1)*S+(-AJ2(J)+AJ1(J))/2.0
2333. PA75P112 = DXI(IM2)*XIYIP(J,IM2)*(-AJ2(J)+AJ1(J))/2.0
2334. TO=G2-1
2335. T1=(G1*(PA17*PA62+PA2*PA47+PA32**2)+1)**TO
2336. T2=2*G1*G2*PA32*PA32P112=T1
2337. T3=(G1*(PA29*PA74+PA14*PA59+PA44**2)+1)**TO
2338. T4=PA29*PA74P112+PA29P112*PA74+PA14*PA59P112+PA14P112*PA59+2*PA44*
2339. PA44P112
2340. T5=G1*G2*T3=T4
2341. T6=(G1*(PA18*PA63+PA3*PA48+PA33**2)+1)**TO
2342. T7=(G1*(PA30*PA75+PA15*PA80+PA45**2)+1)**TO
2343. T8=PA30*PA75P112+PA30P112*PA75+PA15*PA80P112+PA15P112*PA80+2*PA45*
2344. PA48P112
2345. R1KP112S=(S*(SG(IM1,J,KP1))=(G1*G2*T7*T8+S*T5)+G1*G2*T7*T8)+3*(SG(
2346. IM1,J,K)*(2*G1*G2*PA33*PA33P112)+T8*S+T2)+2*G1*G2*PA33*PA33P112*T8
2347. )+S=(G1*G2*SG(I,J,KP1))/T3*T4*S*T5)+3*(2*G1*G2*SG(I,J,K)*PA32*
2348. PA32P112*T1*S+T2))/4.0
2349. TO=XIYX(J,I)
2350. T1=S**2
2351. DDPU112=DZETA(KLOW)=(CC2=DDZHU=(TO**2*XIX(J,I)**2)=T1*TAI1=CC2=
2352. DDZYU=TO*T1*TAI1)
2353. DANP112S=(DDPU=R1KP112*TA33M+DDPU112=R1K=TA33M+2*XIXI(J,I)=
2354. QZINF=R1KP112/DZETAC(K))
2355. DAN = DANP112
2356. C P113
2357. ELSEIF (CND(I,J,KK,I,J,KP1)) THEN
2358. PA13P113 = DXI(I)*S
2359. PA14P113 = DXI(IM1)
2360. PA26P113 = (-AJ2(J)+AJ1(J))/2.0
2361. PA28P113 = (-AJ2(J)+AJ1(J))/2.0
2362. PA31P113 = DC2/2.0
2363. PA32P113 = DC2/2.0
2364. PA43P113 = DC1/2.0
2365. PA44P113 = DC1/2.0
2366. PA58P113 = DXI(I)*A11R(J,I)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0
2367. PA59P113 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/2.0+DXI(IM1)*A11R(J,IM1)
2368. PA73P113 = DXI(I)*XIYIP(J,I)*S+(-AJ2(J)+AJ1(J))/2.0
2369. PA74P113 = DXI(IM1)*XIYIP(J,IM1)*(-AJ2(J)+AJ1(J))/2.0
2370. TO=G2-1
2371. T1=(G1*(PA17*PA62+PA2*PA47+PA32**2)+1)**TO
2372. T2=(G1*(PA29*PA74+PA14*PA59+PA44**2)+1)**TO
2373. T3=PA29*PA74P113+PA29P113*PA74+PA14*PA59P113+PA14P113*PA59+2*PA44*
2374. PA44P113
2375. R1KP113S=(S*(SG(I,J,KP1))=(G1*G2*T2*T3+S+G1*G2*(G1*(PA28*PA73+PA13

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2376 . PA58+PA43==2)+1]==TO*(PA28+PA73P113+PA28P113+PA73+PA13+PA58P113+
2377 . PA13P113+PA58+2+PA43+PA43P113))+G1+G2+T2+T3)+3*(SG(I,J,K))=(2+G1+
2378 . G2+PA32+PA32P113+T1+S+2+G1+G2+PA31+PA31P113)+(G1+(PA18+PA81+PA1+
2379 . PA48+PA31==2)+1)==TO)+2+G1+G2+PA32+PA32P113+T1)+G1+G2+SG(IM1,J,
2380 . KP1)+T2+T3+S+G1+G2+SG(IM1,J,K)+PA32+PA32P113+T1))/4.0
2381 . TO=XIYX(J,I)
2382 . T1=S==2
2383 . T2=CC2+T1+TA12+CC2=S+TA11
2384 . T3=CC2=S+TAJ1
2385 . T4=CC2+T1+TAJ2
2386 . DDPUP113+DZETA(KLOW)=(DDZXU*(TO*(T4+T3)+(TO==2+XIXX(J,I))==2)+T2)+
2387 . DDZYU*(T4+T3+TO+T2))
2388 . DANP113+S=(DDPU+R1KP113+TA33M+DDPUP113+R1K+TA33M+2+XIXX(J,I)+
2389 . QZINF+R1KP113/DZETAC(K))
2390 . DAN = DANP113
2391 .
2392 . C P114
2393 . ELSEIF (CND(I1,JJ,KK,IP1,J,KP1)) THEN
2394 . PA28P114 = DX1(I1)
2395 . PA28P114 = (-AJ2(J)+AJ1(J))/2.0
2396 . PA31P114 = DC2/2.0
2397 . PA43P114 = DC1/2.0
2398 . PA58P114 = (-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0+DX1(I1)+A11R(J,I)
2399 . PA73P114 = DX1(I1)+XIYIP(J,I)+(-AJ2(J)+AJ1(J))/2.0
2400 . TO=G2-1
2401 . R1KP114=(G1+G2+SG(I,J,KP1))=(G1+(PA28+PA73+PA13+PA58+PA43==2)+1)==
2402 . TO*(PA28+PA73P114+PA28P114+PA73+PA13+PA58P114+PA13P114+PA58+2+
2403 . PA43+PA43P114)+S+8+G1+G2+SG(I,J,K)+PA31+PA31P114+(G1+(PA18+PA81+
2404 . PA1+PA48+PA31==2)+1)==TO)/4.0
2405 . TO=XIYX(J,I)
2406 . DDPUP114+DZETA(KLOW)=(CC2+DDZXU*(TO==2+XIXX(J,I))==2)+S+TA12+CC2+
2407 . DDZYU+TO+S+TA12)
2408 . DANP114+S=(DDPU+R1KP114+TA33M+DDPUP114+R1K+TA33M+2+XIXX(J,I)+
2409 . QZINF+R1KP114/DZETAC(K))
2410 . DAN = DANP114
2411 .
2412 . C P115
2413 . ELSEIF (CND(I1,JJ,KK,IM2,JP1,KP1)) THEN
2414 . PA30P115 = AJ2(J)/2.0
2415 . PA80P115 = AJ2(J)+XIYIP(J,IM2)/2.0
2416 . PA75P115 = AJ2(J)/2.0
2417 . TO=(G1+(PA30+PA75+PA15+PA80+PA45==2)+1)==(G2-1)
2418 . T1=PA30+PA75P115+PA30P115+PA75+PA15+PA80P115
2419 . R1KP115+S=(G1+G2+SG(IM1,J,KP1))+TO+T1+S+G1+G2+TO+T1)/4.0
2420 . DANP115+S=(DDPU+R1KP115+TA33M+2+XIXX(J,I)+QZINF+R1KP115/DZETAC(K)
2421 . )
2422 . DAN = DANP115
2423 .
2424 . C P117
2425 . ELSEIF (CND(I1,JJ,KK,IM1,JP1,KP1)) THEN
2426 . PA29P117 = AJ2(J)/2.0
2427 . PA30P117 = AJ2(J)/2.0
2428 . PA59P117 = AJ2(J)+XIYIP(J,IM1)/2.0
2429 . PA80P117 = AJ2(J)+XIYIP(J,IM2)/2.0
2430 . PA74P117 = AJ2(J)/2.0
2431 . PA75P117 = AJ2(J)/2.0
2432 . TO=G2-1
2433 . T1=(G1+(PA28+PA74+PA14+PA59+PA44==2)+1)==TO
2434 . T2=PA29+PA74P117+PA29P117+PA74+PA14+PA59P117
2435 . T3=G1+G2+T1+T2
2436 . T4=(G1+(PA30+PA75+PA15+PA80+PA45==2)+1)==TO
2437 . T5=PA30+PA75P117+PA30P117+PA75+PA15+PA80P117
2438 . R1KP117+S=(SG(IM1,J,KP1))=(G1+G2+T4+T5+S+T3)+G1+G2+T4+T5)+S+(G1+G2
2439 . +SG(I,J,KP1))+T1+T2+S+T3))/4.0
2440 . DANP117+S=(DDPU+R1KP117+TA33M+2+XIXX(J,I)+QZINF+R1KP117/DZETAC(K)
2441 . )
2442 . DAN = DANP117
2443 .
2444 . C P118
2445 . ELSEIF (CND(I1,JJ,KK,I,JP1,KP1)) THEN
2446 . PA28P118 = AJ2(J)/2.0
2447 . PA29P118 = AJ2(J)/2.0
2448 . PA58P118 = AJ2(J)+XIYIP(J,I)/2.0
2449 . PA59P118 = AJ2(J)+XIYIP(J,IM1)/2.0
2450 . PA73P118 = AJ2(J)/2.0
2451 . PA74P118 = AJ2(J)/2.0
2452 . TO=G2-1
2453 . T1=(G1+(PA29+PA74+PA14+PA59+PA44==2)+1)==TO
2454 . T2=PA29+PA74P118+PA29P118+PA74+PA14+PA59P118
2455 . G2=(G1+G2+T1+T2)+1==TO*(PA28+PA73P118+PA28P118+PA73+PA13+PA58P118))
2456 . G1+G2+T1+T2)+G1+G2+SG(IM1,J,KP1))+T1+T2+S)/4.0
2457 . DDPUP118+DZETA(KLOW)=(CC2+DDZXU+XIYX(J,I)+S+TAJ2+CC2+DDZYU+S+TAJ2)
2458 . DANP118+S=(DDPU+R1KP118+TA33M+DDPUP118+R1K+TA33M+2+XIXX(J,I)+
2459 . QZINF+R1KP118/DZETAC(K))
2460 . DAN = DANP118
2461 .
2462 . C P119
2463 . ELSEIF (CND(I1,JJ,KK,IP1,JP1,KP1)) THEN
2464 . PA28P119 = AJ2(J)/2.0
2465 . PA58P119 = AJ2(J)+XIYIP(J,I)/2.0
2466 . PA73P119 = AJ2(J)/2.0
2467 . R1KP119=(G1+G2+SG(I,J,KP1))=(G1+(PA28+PA73+PA13+PA58+PA43==2)+1)==(
2468 . G2-1)+(PA28+PA73P119+PA28P119+PA73+PA13+PA58P119)+S/4.0
2469 . DANP119+S=(DDPU+R1KP119+TA33M+2+XIXX(J,I)+QZINF+R1KP119/DZETAC(K)
2470 . )
2471 . DAN = DANP119
2472 .
2473 . C P133
2474 . ELSEIF (CND(I1,JJ,KK,I,JP1,KP2)) THEN
2475 . DDPUP133+DZETA(KLOW)=(CC3+DDZXU+XIYX(J,I)+S+TAJ1+CC3+DDZYU+S+TAJ1)
2476 . DANP133+DDPUP133+R1K+S+TA33M
2477 . DAN = DANP133
2478 .
2479 . C P138
2480 . ELSEIF (CND(I1,JJ,KK,IM2,J,KP2)) THEN
2481 . PA33P138 = DC3/2.0
2482 . PA45P138 = DC2/2.0
2483 . TO=G2-1
2484 . T1=(G1+(PA18+PA83+PA3+PA48+PA33==2)+1)==TO
2485 . T2=(G1+(PA30+PA75+PA15+PA80+PA45==2)+1)==TO
2486 . R1KP138=(S=(2+G1+G2+SG(IM1,J,KP1))+PA45+PA45P138+T2+S+2+G1+G2+PA45+
2487 . PA45P138+T2)+3*(2+G1+G2+SG(IM1,J,K)+PA33+PA33P138+T1+S+2+G1+G2+
2488 . PA33+PA33P138+T1))/4.0
2489 . DANP138+S=(DDPU+R1KP138+TA33M+2+XIXX(J,I)+QZINF+R1KP138/DZETAC(K)
2490 . )
2491 . DAN = DANP138
2492 .
2493 . C P137
2494 . ELSEIF (CND(I1,JJ,KK,IM1,J,KP2)) THEN
2495 . PA32P137 = DC3/2.0
2496 . PA33P137 = DC3/2.0
2497 . PA44P137 = DC2/2.0
2498 . PA45P137 = DC2/2.0
2499 . TO=G2-1
2500 . T1=(G1+(PA17+PA82+PA2+PA47+PA32==2)+1)==TO
2501 . T2=2+G1+G2+PA32+PA32P137+T1
2502 . T3=(G1+(PA29+PA74+PA14+PA59+PA44==2)+1)==TO
2503 . T4=2+G1+G2+PA44+PA44P137+T3
2504 . T5=(G1+(PA18+PA83+PA3+PA48+PA33==2)+1)==TO
2505 . T6=(G1+(PA30+PA75+PA15+PA80+PA45==2)+1)==TO
2506 . R1KP137=(S=(SG(IM1,J,KP1))=(2+G1+G2+PA45+PA45P137+T6+S+T4)+2+G1+G2+
2507 . PA45+PA45P137+T6)+3*(SG(IM1,J,KP1))=(2+G1+G2+PA33+PA33P137+T5+S+T2)+
2508 . 2+G1+G2+PA33+PA33P137+T5)+S+(2+G1+G2+SG(I,J,KP1))+PA44+PA44P137+T3
2509 . +S+T4)+3*(2+G1+G2+SG(I,J,K)+PA32+PA32P137+T1+S+T2))/4.0
2510 . TO=XIYX(J,I)
2511 . DDPUP137+DZETA(KLOW)=(CC3+DDZXU*(TO==2+XIXX(J,I))==2)+S+TA11+CC3+
2512 . DDZYU+TO+S+TA11)
2513 . DANP137+S=(DDPU+R1KP137+TA33M+DDPUP137+R1K+TA33M+2+XIXX(J,I)+
2514 . QZINF+R1KP137/DZETAC(K))

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2508.      DAN = DANP137
2509.
2510.      C P138
2511.      ELSEIF (CND([I,JJ,KK,I,J,KP2]) THEN
2512.          PA31P138 = DC3/2.0
2513.          PA32P138 = DC3/2.0
2514.          PA43P138 = DC2/2.0
2515.          PA44P138 = DC2/2.0
2516.          TO=G2-1
2517.          T1=[G1=[PA17+PA62+PA2+PA47+PA32==2)+1]==TO
2518.          T2=[G1=[PA29+PA74+PA14+PA59+PA44==2)+1]==TO
2519.          R1KP138=[S=[SG(I,J,KP1)=[2+G1=G2+PA44+PA44P138+T2+S+2+G1=G2+PA43+
2520.          PA43P138=[G1=[PA28+PA73+PA13+PA58+PA43==2)+1]==TO]+2+G1=G2+PA44+
2521.          PA44P138+T2)+3=[SG(I,J,K)=[2+G1=G2+PA32+PA32P138+T1+S+2+G1=G2+
2522.          PA31+PA31P138=[G1=[PA16+PA61+PA1+PA48+PA31==2)+1]==TO]+2+G1=G2+
2523.          PA32+PA32P138+T1)+2+G1=G2+SG(IM1,J,KP1)=PA44+PA44P138+T2+S+6+G1=
2524.          G2+SG(IM1,J,K)+PA32+PA32P138+T1)/4.0
2525.          TO=XIYX(J,I)
2526.          T1=CC3+S+TA12+CC3=TA11
2527.          T2=CC3=TAJ1
2528.          T3=CC3=S+TAJ2
2529.          DDPUP138=DZETA(KLOW)=(DDZXU=(TO=(T3+T2)+[TO==2+XIXX(J,I)==2)=T1)+
2530.          DDZYU=(T3+T2+TO+T1))
2531.          DANP138=S=(DDPU=R1KP138+TA33M+DDPUP138=R1K+TA33M+2=XIXXI(J,I)+
2532.          OZINF=R1KP138/DZETAC(K))
2533.          DAN = DANP138
2534.
2535.      C P139
2536.      ELSEIF (CND([I,JJ,KK,IP1,J,KP2]) THEN
2537.          PA31P139 = DC3/2.0
2538.          PA43P139 = DC2/2.0
2539.          TO=G2-1
2540.          R1KP139=[S=[SG(I,J,KP1)=PA43+PA43P139=[G1=[PA28+PA73+PA13+
2541.          PA58+PA43==2)+1]==TO+S+6+G1=G2+SG(I,J,K)+PA31+PA31P139=[G1=[PA16+
2542.          PA61+PA1+PA48+PA31==2)+1]==TO]/4.0
2543.          TO=XIYX(J,I)
2544.          DDPUP139=DZETA(KLOW)=(CC3=DDZXU=(TO==2+XIXX(J,I)==2)=TA12+CC3+
2545.          DDZYU=TO=TA12)
2546.          DANP139=S=(DDPU=R1KP139+TA33M+DDPUP139=R1K+TA33M+2=XIXXI(J,I)+
2547.          OZINF=R1KP139/DZETAC(K))
2548.          DAN = DANP139
2549.
2550.      C P143
2551.      ELSEIF (CND([I,JJ,KK,I,JP1,KP2]) THEN
2552.          DDPUP143=DZETA(KLOW)=(CC3=DDZXU=XIYX(J,I)=TAJ2+CC3+DDZYU=TAJ2)
2553.          DANP143=DDPUP143+R1K+S=TA33M
2554.          DAN = DANP143
2555.
2556.      C P181
2557.      ELSEIF (CND([I,JJ,KK,IM2,J,K+3]) THEN
2558.          PA45P181 = DC3/2.0
2559.          TO=[G1=[PA30+PA75+PA15+PA60+PA45==2)+1]==[G2-1]
2560.          R1KP181=[S=[2+G1=G2+SG(IM1,J,KP1)=PA45+PA45P181=TO+S+2+G1=G2+PA45+
2561.          PA45P181+TO)/4.0
2562.          DANP181=S=(DDPU=R1KP181+TA33M+2=XIXXI(J,I)=OZINF=R1KP181/DZETAC(K))
2563.          DAN = DANP181
2564.
2565.      C P182
2566.      ELSEIF (CND([I,JJ,KK,IM1,J,K+3]) THEN
2567.          PA44P182 = DC3/2.0
2568.          PA45P182 = DC3/2.0
2569.          TO=G2-1
2570.          T1=[G1=[PA29+PA74+PA14+PA59+PA44==2)+1]==TO
2571.          T2=2+G1=G2+PA44+PA44P182+T1
2572.          T3=[G1=[PA30+PA75+PA15+PA60+PA45==2)+1]==TO
2573.          R1KP182=[S=[SG(IM1,J,KP1)=(2+G1=G2+PA45+PA45P182+T3+S+T2)+2+G1=G2+
2574.          PA45+PA45P182+T3)+S=(2+G1=G2+SG(I,J,KP1)=PA44+PA44P182+T1+S+T2))/
2575.          4.0
2576.          DANP182=S=(DDPU=R1KP182+TA33M+2=XIXXI(J,I)=OZINF=R1KP182/DZETAC(K))
2577.          DAN = DANP182
2578.
2579.      C P183
2580.      ELSEIF (CND([I,JJ,KK,I,J,K+3]) THEN
2581.          PA43P183 = DC3/2.0
2582.          PA44P183 = DC3/2.0
2583.          TO=G2-1
2584.          T1=[G1=[PA29+PA74+PA14+PA59+PA44==2)+1]==TO
2585.          R1KP183=[S=[SG(I,J,KP1)=[2+G1=G2+PA44+PA44P183+T1+S+2+G1=G2+PA43+
2586.          PA43P183=[G1=[PA28+PA73+PA13+PA58+PA43==2)+1]==TO]+2+G1=G2+PA44+
2587.          PA44P183+T1)+2+G1=G2+SG(IM1,J,KP1)=PA44+PA44P183+T1+S)/4.0
2588.          DANP183=S=(DDPU=R1KP183+TA33M+2=XIXXI(J,I)=OZINF=R1KP183/DZETAC(K))
2589.          DAN = DANP183
2590.
2591.      C P184
2592.      ELSEIF (CND([I,JJ,KK,IP1,J,K+3]) THEN
2593.          PA43P184 = DC3/2.0
2594.          R1KP184=[G1=G2+SG(I,J,KP1)=PA43+PA43P184=[G1=[PA28+PA73+PA13+PA58+
2595.          PA43==2)+1]==[G2-1]+S/2.0
2596.          DANP184=S=(DDPU=R1KP184+TA33M+2=XIXXI(J,I)=OZINF=R1KP184/DZETAC(K))
2597.          DAN = DANP184
2598.      ENDIF
2599.
2600.      C
2601.      RETURN
2602.      END
2603.      SUBROUTINE R2(J,I,K,JJ,II,KK,DAN)
2604.      RMDER2.FOR
2605.
2606.      C
2607.      INCLUDE (INTRO)
2608.
2609.      C
2610.      P
2611.
2612.      C
2613.      P11 = P(J,K-3,IM2)
2614.      P12 = P(J,K-3,IM1)
2615.      P13 = P(J,K-3,I)
2616.      P14 = P(J,K-3,IP1)
2617.      P33 = P(JM1,KM2,I)
2618.      P36 = P(J,KM2,IM2)
2619.      P37 = P(J,KM2,IM1)
2620.      P38 = P(J,KM2,I)
2621.      P39 = P(J,KM2,IP1)
2622.      P43 = P(JP1,KM2,I)
2623.      P55 = P(JM1,KM1,IM2)
2624.      P57 = P(JM1,KM1,IM1)
2625.      P58 = P(JM1,KM1,I)
2626.      P59 = P(JM1,KM1,IP1)
2627.      P61 = P(J,KM1,IM2)
2628.      P62 = P(J,KM1,IM1)
2629.      P63 = P(J,KM1,I)
2630.      P64 = P(J,KM1,IP1)
2631.      P66 = P(JP1,KM1,IM2)
2632.      P67 = P(JP1,KM1,IM1)
2633.      P68 = P(JP1,KM1,I)
2634.      P69 = P(JP1,KM1,IP1)
2635.      P81 = P(JM1,K,IM2)
2636.      P82 = P(JM1,K,IM1)
2637.      P83 = P(JM1,K,I)
2638.      P84 = P(JM1,K,IP1)
2639.      P86 = P(J,K,IM2)
2640.      P87 = P(J,K,IM1)
2641.      P88 = P(J,K,I)
2642.      P89 = P(J,K,IP1)
2643.      P91 = P(JP1,K,IM2)
2644.      P92 = P(JP1,K,IM1)
2645.      P93 = P(JP1,K,I)
2646.      P94 = P(JP1,K,IP1)

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2640. C
2641. C
2642. C
2643. PB
2644. PB1 = DX11(1) = (PB8+S+P88)+OXINF/XIXIP(J,1)
2645. PB2 = DX11(1M1) = (PB7+S+P88)+OXINF/XIXIP(J,1M1)
2646. PB3 = DX11(1M2) = (PB6+S+P87)+OXINF/XIXIP(J,1M2)
2647. PB7 = DX11(1) = (PB3+S+P84)+OXINF/XIXIP(J,1)
2648. PB8 = DX11(1M1) = (PB2+S+P83)+OXINF/XIXIP(J,1M1)
2649. PB9 = DX11(1M2) = (PB1+S+P82)+OXINF/XIXIP(J,1M2)
2650. PB16 = XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P94+P83-P89-P88)+AJ1
2651. (J) = (P89+P88-P84-P83))/2.0
2652. PB17 = XIXIP(J,1M1) = OXINF/S/XIXIP(J,1M1) + (AJ2(J) = (P83+P82-P88-P87)
2653. +AJ1(J) = (P88+P87-P83-P82))/2.0
2654. PB18 = XIXIP(J,1M2) = OXINF/S/XIXIP(J,1M2) + (AJ2(J) = (P82+P81-P87-P86)
2655. +AJ1(J) = (P87+P86-P82-P81))/2.0
2656. PB22 = XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P88+P88-P84-P83)+AJ1
2657. (J) = (P84+P83-P89-P88))/2.0
2658. PB23 = XIXIP(J,1M1) = OXINF/S/XIXIP(J,1M1) + (AJ2(J) = (P88+P87-P83-P82)
2659. +AJ1(J) = (P83+P82-P88-P87))/2.0
2660. PB24 = XIXIP(J,1M2) = OXINF/S/XIXIP(J,1M2) + (AJ2(J) = (P87+P86-P82-P81)
2661. +AJ1(J) = (P82+P81-P87-P86))/2.0
2662. PB31 = OZINF+(DCA=P89+DCA=P88+DCS=P84+DCS=P83+DCS=P39+DCS=P38)/2.0
2663. PB32 = OZINF+(DCA=P88+DCA=P87+DCS=P83+DCS=P82+DCS=P38+DCS=P37)/2.0
2664. PB33 = OZINF+(DCA=P87+DCA=P86+DCS=P82+DCS=P81+DCS=P37+DCS=P36)/2.0
2665. PB37 = OZINF+(DCA=P84+DCA=P83+DCS=P39+DCS=P38+DCS=P14+DCS=P13)/2.0
2666. PB38 = OZINF+(DCA=P83+DCA=P82+DCS=P38+DCS=P37+DCS=P13+DCS=P12)/2.0
2667. PB39 = OZINF+(DCA=P82+DCA=P81+DCS=P37+DCS=P36+DCS=P12+DCS=P11)/2.0
2668. PB46 = A11R(J,1) = (DX11(1) = (P88+S+P88)+OXINF/XIXIP(J,1) + XIXIP(J,1)
2669. = (XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P94+P83-P89-P88)+AJ1(J) =
2670. (P89+P88-P84-P83))/2.0)
2671. PB47 = A11R(J,1M1) = (DX11(1M1) = (P87+S+P88)+OXINF/XIXIP(J,1M1) +
2672. XIXIP(J,1M1) = (XIXIP(J,1M1) = OXINF/S/XIXIP(J,1M1) + (AJ2(J) = (P83+P82-
2673. P88-P87)+AJ1(J) = (P88+P87-P83-P82))/2.0)
2674. PB48 = A11R(J,1M2) = (DX11(1M2) = (P88+S+P87)+OXINF/XIXIP(J,1M2) +
2675. XIXIP(J,1M2) = (XIXIP(J,1M2) = OXINF/S/XIXIP(J,1M2) + (AJ2(J) = (P82+P81-
2676. P87-P86)+AJ1(J) = (P87+P86-P82-P81))/2.0)
2677. PB52 = A11R(J,1) = (DX11(1) = (P83+S+P84)+OXINF/XIXIP(J,1) + XIXIP(J,1)
2678. = (XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P89+P88-P84-P83)+AJ1(J) =
2679. (P84+P83-P89-P88))/2.0)
2680. PB53 = A11R(J,1M1) = (DX11(1M1) = (P82+S+P83)+OXINF/XIXIP(J,1M1) +
2681. XIXIP(J,1M1) = (XIXIP(J,1M1) = OXINF/S/XIXIP(J,1M1) + (AJ2(J) = (P88+P87-
2682. P83-P82)+AJ1(J) = (P83+P82-P88-P87))/2.0)
2683. PB54 = A11R(J,1M2) = (DX11(1M2) = (P81+S+P82)+OXINF/XIXIP(J,1M2) +
2684. XIXIP(J,1M2) = (XIXIP(J,1M2) = OXINF/S/XIXIP(J,1M2) + (AJ2(J) = (P87+P86-
2685. P82-P81)+AJ1(J) = (P82+P81-P87-P86))/2.0)
2686. PB61 = XIXIP(J,1) = (DX11(1) = (P88+S+P88)+OXINF/XIXIP(J,1) + XIXIP(J,1)
2687. = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P94+P83-P89-P88)+AJ1(J) = (P89+P88-
2688. P84-P83))/2.0)
2689. PB62 = XIXIP(J,1M1) = (DX11(1M1) = (P87+S+P88)+OXINF/XIXIP(J,1M1) +
2690. XIXIP(J,1M1) = OXINF/S/XIXIP(J,1M1) + (AJ2(J) = (P83+P82-P88-P87)+AJ1(J)
2691. = (P88+P87-P83-P82))/2.0)
2692. PB63 = XIXIP(J,1M2) = (DX11(1M2) = (P86+S+P87)+OXINF/XIXIP(J,1M2) +
2693. XIXIP(J,1M2) = OXINF/S/XIXIP(J,1M2) + (AJ2(J) = (P82+P81-P87-P86)+AJ1(J)
2694. = (P87+P86-P82-P81))/2.0)
2695. PB67 = XIXIP(J,1) = (DX11(1) = (P83+S+P84)+OXINF/XIXIP(J,1) + XIXIP(J,1)
2696. = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P89+P88-P84-P83)+AJ1(J) = (P84+P83-
2697. P89-P88))/2.0)
2698. PB68 = XIXIP(J,1M1) = (DX11(1M1) = (P82+S+P83)+OXINF/XIXIP(J,1M1) +
2699. XIXIP(J,1M1) = OXINF/S/XIXIP(J,1M1) + (AJ2(J) = (P88+P87-P83-P82)+AJ1(J)
2700. = (P83+P82-P88-P87))/2.0)
2701. PB69 = XIXIP(J,1M2) = (DX11(1M2) = (P81+S+P82)+OXINF/XIXIP(J,1M2) +
2702. XIXIP(J,1M2) = OXINF/S/XIXIP(J,1M2) + (AJ2(J) = (P87+P86-P82-P81)+AJ1(J)
2703. = (P82+P81-P87-P86))/2.0)
2704. C
2705. C
2706. C
2707. RIKU,DPL0
2708. TO=(G1=(PB17+PB52+PB2+PB47+PB32==2)+1)==G2
2709. T1=(G1=(PB18+PB53+PB3+PB48+PB33==2)+1)==G2
2710. T2=(G1=(PB53+PB8+PB23+PB66+PB38==2)+1)==G2
2711. T3=(G1=(PB64+PB9+PB24+PB69+PB39==2)+1)==G2
2712. RIKU1=(S=(SG(1M1,J,KM1)=(T3+S+T2)+T3)+S=(SG(1,J,KM1)=(T2+S+(G1=(
2713. PB52+PB7+PB22+PB67+PB37==2)+1)==G2)+T2)+3=(SG(1M1,J,K)=(T1+S+T0)+
2714. T1)+3=(SG(1,J,K)=(T0+S+(G1=(PB16+PB61+PB1+PB46+PB31==2)+1)==G2)+
2715. T0))/4.0
2716. DPL0=DPL0(J,1)
2717. C
2718. C
2719. C
2720. DER2
2721. IF (CND(11,JJ,KK,1M1,J,K-3)) THEN
2722. PB39P11 = DC6/2.0
2723. TO=(G1=(PB54+PB9+PB24+PB69+PB39==2)+1)==(G2-1)
2724. RIKUP11=(S=(2+G1+G2+SG(1M1,J,KM1)=PB38+PB39P11+T0+S+2=G1+G2+PB39+
2725. PB39P11=TO))/4.0
2726. DANP11=DDPL*RIKUP11+TA33P+2*XIXI(J,1)=OXINF*RIKUP11/DZETAC(K)
2727. DAN = DANP11
2728. C P12
2729. ELSEIF (CND(11,JJ,KK,1M1,J,K-3)) THEN
2730. PB38P12 = DC6/2.0
2731. PB39P12 = DC6/2.0
2732. TO=G2-1
2733. T1=(G1=(PB53+PB8+PB23+PB66+PB38==2)+1)==TO
2734. T2=2+G1+G2+PB38+PB39P12=T1
2735. T3=(G1=(PB54+PB9+PB24+PB69+PB39==2)+1)==TO
2736. RIKUP12=(S=(SG(1M1,J,KM1)=(2+G1+G2+PB38+PB39P12+T3+S+T2)+2=G1+G2+
2737. PB38+PB39P12=T3)+S=(2+G1+G2+SG(1,J,KM1)=PB38+PB39P12+T1+S+T2))/
2738. 4.0
2739. DANP12=DDPL*RIKUP12+TA33P+2*XIXI(J,1)=OXINF*RIKUP12/DZETAC(K)
2740. DAN = DANP12
2741. C P13
2742. ELSEIF (CND(11,JJ,KK,1,J,K-3)) THEN
2743. PB37P13 = DC6/2.0
2744. PB38P13 = DC6/2.0
2745. TO=G2-1
2746. T1=(G1=(PB53+PB8+PB23+PB66+PB38==2)+1)==TO
2747. RIKUP13=(S=(SG(1,J,KM1)=(2+G1+G2+PB38+PB38P13+T1+S+2=G1+G2+PB37+
2748. PB37P13=(G1=(PB52+PB7+PB22+PB67+PB37==2)+1)==TO)+2=G1+G2+PB38+
2749. PB38P13+T1)+2+G1+G2+SG(1M1,J,KM1)=PB38+PB38P13+T1+S))/4.0
2750. DANP13=DDPL*RIKUP13+TA33P+2*XIXI(J,1)=OXINF*RIKUP13/DZETAC(K)
2751. DAN = DANP13
2752. C P14
2753. ELSEIF (CND(11,JJ,KK,1P1,J,K-3)) THEN
2754. PB37P14 = DC6/2.0
2755. RIKUP14=(G1+G2+SG(1,J,KM1)=PB37+PB37P14=(G1=(PB52+PB7+PB22+PB67+
2756. PB37P14=2)+1)=(G2-1))/5/2.0
2757. DANP14=DDPL*RIKUP14+TA33P+2*XIXI(J,1)=OXINF*RIKUP14/DZETAC(K)
2758. DAN = DANP14
2759. C P33
2760. ELSEIF (CND(11,JJ,KK,1,1M1,KM2)) THEN
2761. DDPLP33=DZETA(KLOW)=(CC6+DDZL*XIXY(J,1)=S+TAJ1+CC6+DDZYL*S+TAJ1)
2762. DANP33=DDPLP33*RIKU=TA33P
2763. DAN = DANP33
2764. C P36
2765. ELSEIF (CND(11,JJ,KK,1M2,J,KM2)) THEN
2766. PB33P36 = DC6/2.0
2767. PB39P36 = DC6/2.0
2768. TO=G2-1
2769. T1=(G1=(PB18+PB53+PB3+PB48+PB33==2)+1)==TO
2770. T2=(G1=(PB54+PB9+PB24+PB69+PB39==2)+1)==TO
2771. RIKUP36=(S=(2+G1+G2+SG(1M1,J,KM1)=PB38+PB39P36+T2+S+2=G1+G2+PB38+
2772. PB39P36+T2)+3=(2+G1+G2+SG(1M1,J,K)=PB33+PB33P36+T1+S+2=G1+G2+PB33
2773. +PB33P36+T1))/4.0
2774. DANP36=DDPL*RIKUP36+TA33P+2*XIXI(J,1)=OXINF*RIKUP36/DZETAC(K)

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2772. DAN = DANP36
2773. C P37
2774. ELSEIF [CND[I,J,J,K,IM1,J,KM2]] THEN
2775.   P832P37 = DC6/2.0
2776.   P833P37 = DC6/2.0
2777.   P834P37 = DC5/2.0
2778.   P835P37 = DC5/2.0
2779.   TO=G2-1
2780.   T1=[G1=[P817+P862+P82+P847+P832==2]+1]==TO
2781.   T2=[G1=[G2+P832+P832P37+T1
2782.   T3=[G1=[P853+P88+P823+P868+P838==2]+1]==TO
2783.   T4=[G1=[G2+P838+P838P37+T3
2784.   T5=[G1=[P818+P863+P83+P848+P833==2]+1]==TO
2785.   T6=[G1=[P854+P89+P824+P869+P839==2]+1]==TO
2786.   R1KUP37=[S=[SG[IM1,J,KM1]]=(2+G1+G2+P838+P833P37+T6+S+T4)+2+G1+G2+
2787.   P838+P839P37+T6]+3=[SG[IM1,J,K]]=(2+G1+G2+P833+P833P37+T5+S+T2)+2+
2788.   G1+G2+P833+P833P37+T5]+S=(2+G1+G2+SG[I,J,KM1])=P838+P838P37+T3+S+
2789.   T4]+3=(2+G1+G2+SG[I,J,K])=P832+P832P37+T1+S+T2)/4.0
2790.   TO=XIYX[J,I]
2791.   DDPLP37=DZETA(KLOW)=[CC6=DDZXL=(TO==2+XIXX[J,I]==2)=S+TAI1+CC6+
2792.   DDZYL=TO+S+TAI1]
2793.   DANP37=DDPL+R1KUP37+TA33P+DDPLP37+R1KU=TA33P+2+XIXXI[J,I]=QZINF+
2794.   R1KUP37/DZETAC(K)
2795.   DAN = DANP37
2796. C P38
2797. ELSEIF [CND[I,J,J,K,I,J,KM2]] THEN
2798.   P831P38 = DC6/2.0
2799.   P832P38 = DC6/2.0
2800.   P837P38 = DC5/2.0
2801.   P838P38 = DC5/2.0
2802.   TO=G2-1
2803.   T1=[G1=[P817+P862+P82+P847+P832==2]+1]==TO
2804.   T2=[G1=[P853+P88+P823+P868+P838==2]+1]==TO
2805.   R1KUP38=[S=[SG[I,J,KM1]]=(2+G1+G2+P838+P838P38+T2+S+2+G1+G2+P837+
2806.   P837P38+T2)+3=[SG[I,J,K]]=(2+G1+G2+P832+P832P38+T1+S+2+G1+G2+P831+
2807.   P838P38+T2)+3=[SG[I,J,K]]=(2+G1+G2+P832+P832P38+T1+S+2+G1+G2+P831+
2808.   P831P38+T1)+3=[SG[I,J,K]]=(2+G1+G2+P832+P832P38+T1+S+2+G1+G2+P831+
2809.   P832P38+T1)+2+G1+G2+SG[IM1,J,KM1]=P838+P838P38+T2+S+S+G1+G2+SG[
2810.   IM1,J,K]=P832+P832P38+T1)/4.0
2811.   TO=XIYX[J,I]
2812.   T1=CC6+S+TAI2+CC6+TAI1
2813.   T2=CC6+TAJ1
2814.   T3=CC6+S+TAJ2
2815.   DDPLP38=DZETA(KLOW)=[DDZXL=[TO=(T3+T2)+[TO==2+XIXX[J,I]==2]=T1]+
2816.   DDZYL=[T3+T2+TO+T1]]
2817.   DANP38=DDPL+R1KUP38+TA33P+DDPLP38+R1KU=TA33P+2+XIXXI[J,I]=QZINF+
2818.   R1KUP38/DZETAC(K)
2819.   DAN = DANP38
2820. C P39
2821. ELSEIF [CND[I,J,J,K,IP1,J,KM2]] THEN
2822.   P831P39 = DC6/2.0
2823.   P837P39 = DC5/2.0
2824.   TO=G2-1
2825.   R1KUP39=[2+G1+G2+SG[I,J,KM1]=P837+P837P39=[G1=[P852+P87+P822+P867+
2826.   P837==2]+1]==TO+S+S+G1+G2+SG[I,J,K]=P831+P831P39=[G1=[P816+P861+
2827.   P81+P846+P831==2]+1]==TO)/4.0
2828.   TO=XIYX[J,I]
2829.   DDPLP39=DZETA(KLOW)=[CC6=DDZXL=(TO==2+XIXX[J,I]==2)=TAI2+CC6+DDZYL
2830.   =TO+TAI2]
2831.   DANP39=DDPL+R1KUP39+TA33P+DDPLP39+R1KU=TA33P+2+XIXXI[J,I]=QZINF+
2832.   R1KUP39/DZETAC(K)
2833.   DAN = DANP39
2834. C P43
2835. ELSEIF [CND[I,J,J,K,I,JP1,KM2]] THEN
2836.   DDPLP43=DZETA(KLOW)=[CC6=DDZXL=XIYX[J,I]=TAJ2+CC6+DDZYL=TAJ2]
2837.   DANP43=DDPLP43+R1KU=TA33P
2838.   DAN = DANP43
2839. C P56
2840. ELSEIF [CND[I,J,J,K,IM2,IM1,KM1]] THEN
2841.   P824P56 = -[1.0/2.0*AJ1[J]]
2842.   P854P56 = -[1.0/2.0*AJ1[J]]*XIYIP[J,IM2]
2843.   P869P56 = -[1.0/2.0*AJ1[J]]
2844.   TO=P854P56+P89+P824+P869P56+P824P56+P869
2845.   T1=[G1=[P854+P89+P824+P869+P839==2]+1]==(G2-1)
2846.   R1KUP56=[S=[G1+G2+SG[IM1,J,KM1]]=(TO+T1+S+G1+G2+TO+T1)/4.0
2847.   DANP56=DDPL+R1KUP56+TA33P+2+XIXXI[J,I]=QZINF+R1KUP56/DZETAC(K)
2848.   DAN = DANP56
2849. C P57
2850. ELSEIF [CND[I,J,J,K,IM1,IM1,KM1]] THEN
2851.   P823P57 = -[1.0/2.0*AJ1[J]]
2852.   P824P57 = -[1.0/2.0*AJ1[J]]
2853.   P853P57 = -[1.0/2.0*AJ1[J]]*XIYIP[J,IM1]
2854.   P854P57 = -[1.0/2.0*AJ1[J]]*XIYIP[J,IM2]
2855.   P868P57 = -[1.0/2.0*AJ1[J]]
2856.   P869P57 = -[1.0/2.0*AJ1[J]]
2857.   TO=P853P57+P88+P823+P868P57+P823P57+P868
2858.   T1=G2-1
2859.   T2=[G1=[P853+P88+P823+P868+P838==2]+1]==T1
2860.   T3=[G1=[G2+TO+T2
2861.   T4=[P854P57+P89+P824+P869P57+P824P57+P869
2862.   T5=[G1=[P854+P89+P824+P869+P839==2]+1]==T1
2863.   R1KUP57=[S=[SG[IM1,J,KM1]]=(G1+G2+T4+T5+S+T3)+G1+G2+T4+T5]+S=[G1+G2
2864.   +SG[I,J,KM1]]=(TO+T2+S+T3))/4.0
2865.   DANP57=DDPL+R1KUP57+TA33P+2+XIXXI[J,I]=QZINF+R1KUP57/DZETAC(K)
2866.   DAN = DANP57
2867. C P58
2868. ELSEIF [CND[I,J,J,K,I,IM1,KM1]] THEN
2869.   P822P58 = -[1.0/2.0*AJ1[J]]
2870.   P823P58 = -[1.0/2.0*AJ1[J]]
2871.   P852P58 = -[1.0/2.0*AJ1[J]]*XIYIP[J,I]
2872.   P853P58 = -[1.0/2.0*AJ1[J]]*XIYIP[J,IM1]
2873.   P867P58 = -[1.0/2.0*AJ1[J]]
2874.   P868P58 = -[1.0/2.0*AJ1[J]]
2875.   TO=P852P58+P88+P822+P868P58+P823P58+P868
2876.   T1=G2-1
2877.   T2=[G1=[P853+P88+P823+P868+P838==2]+1]==T1
2878.   R1KUP58=[S=[SG[I,J,KM1]]=(G1+G2+TO+T2+S+G1+G2=[P852P58+P87+P822+
2879.   P867P58+P822P58+P867]+[G1=[P852+P87+P822+P867+P837==2]+1]==T1)+G1
2880.   +G2+TO+T2]+G1+G2+SG[IM1,J,KM1]=TO+T2+S)/4.0
2881.   TO=S==2
2882.   DDPLP58=DZETA(KLOW)=[CC5=DDZXL=XIYX[J,I]=TO+TAJ1+CC5+DDZYL=TO+TAJ1
2883.   ]
2884.   DANP58=DDPL+R1KUP58+TA33P+DDPLP58+R1KU=TA33P+2+XIXXI[J,I]=QZINF+
2885.   R1KUP58/DZETAC(K)
2886.   DAN = DANP58
2887. C P59
2888. ELSEIF [CND[I,J,J,K,IP1,IM1,KM1]] THEN
2889.   P822P59 = -[1.0/2.0*AJ1[J]]
2890.   P852P59 = -[1.0/2.0*AJ1[J]]*XIYIP[J,I]
2891.   P867P59 = -[1.0/2.0*AJ1[J]]
2892.   R1KUP59=[G1+G2+SG[I,J,KM1]]=(P852P59+P87+P822+P867P59+P822P59+P867)+
2893.   [G1=[P852+P87+P822+P867+P837==2]+1]==(G2-1)+S/4.0
2894.   DANP59=DDPL+R1KUP59+TA33P+2+XIXXI[J,I]=QZINF+R1KUP59/DZETAC(K)
2895.   DAN = DANP59
2896. C P61
2897. ELSEIF [CND[I,J,J,K,IM2,J,KM1]] THEN
2898.   P89P61 = DXI[IM2]=S
2899.   P824P61 = [-AJ2(J)+AJ1(J)]/2.0
2900.   P833P61 = DC5/2.0
2901.   P839P61 = DC4/2.0
2902.   P854P61 = DXI[IM2]=A1IR[J,IM2]=S+(-AJ2(J)+AJ1(J))*XIYIP[J,IM2]/
2903.   2.0

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2904. P853P61 = DX11(IM2)*XIYIP(J,IM2)*S*(-AJ2(J)+AJ1(J))/2.0
2905. TO=G2-1
2906. T1=(G1*(PB18+P853+P83+P848+P833**2)+1)**TO
2907. T2=(G1*(PB54+P89+P824+P869+P839**2)+1)**TO
2908. T3=P854+P89P61+P854P61+P89+P824+P869P61+P824P61+P869+2+P839+
2909. P839P61
2910. R1KUP61=(S=(G1+G2+SG(IM1,J,KM1))*T2+T3+S+G1+G2+T2+T3)+3*(2+G1+G2+SG
2911. (IM1,J,K)+P833+P833P61+T1+S+2+G1+G2+P833+P833P61+T1))/4.0
2912. DANP61=DDPL+R1KUP61+TA33P+2+X1XX1(J,I)=QZINF=R1KUP61/DZETAC(K)
2913. DAN = DANP61
2914.
2915. C P62
2916. ELSEIF (CND[II,JJ,KK,IM1,J,KM1]) THEN
2917. P84P62 = DX11(IM1)*S
2918. P89P62 = DX11(IM2)
2919. P823P62 = (-AJ2(J)+AJ1(J))/2.0
2920. P824P62 = (-AJ2(J)+AJ1(J))/2.0
2921. P832P62 = DC5/2.0
2922. P833P62 = DC5/2.0
2923. P838P62 = DC4/2.0
2924. P839P62 = DC4/2.0
2925. P853P62 = DX11(IM1)*A11R(J,IM1)*S*(-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/
2926. 2.0
2927. P854P62 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/2.0+DX11(IM2)*A11R(J,IM2)
2928. P868P62 = DX11(IM1)*XIYIP(J,IM1)*S*(-AJ2(J)+AJ1(J))/2.0
2929. P869P62 = DX11(IM2)*XIYIP(J,IM2)*(-AJ2(J)+AJ1(J))/2.0
2930. TO=G2-1
2931. T1=(G1*(PB17+P862+P82+P847+P832**2)+1)**TO
2932. T2=2+G1+G2+P832+P832P62+T1
2933. T3=(G1*(P853+P88+P823+P868+P838**2)+1)**TO
2934. T4=P853+P88P62+P853P62+P88+P823+P868P62+P823P62+P868+2+P838+
2935. P838P62
2936. T5=G1+G2+T3+T4
2937. T6=(G1*(PB18+P863+P83+P848+P833**2)+1)**TO
2938. T7=(G1*(PB54+P89+P824+P869+P839**2)+1)**TO
2939. T8=P854+P89P62+P854P62+P89+P824+P869P62+P824P62+P869+2+P839+
2940. P839P62
2941. R1KUP62=(S=(SG(IM1,J,KM1))*T5+G1+G2+T7+T8+S+T6)+3*(SG(
2942. IM1,J,K)+2+G1+G2+P833+P833P62+T6+S+T2)+2+G1+G2+P833+P833P62+T6)+
2943. S*(G1+G2+SG(I,J,KM1))*T3+T4+S+T5)+3*(2+G1+G2+SG(I,J,K)+P832+
2944. P832P62+T1+S+T2))/4.0
2945. TO=XIYX(J,I)
2946. T1=S**2
2947. DDPLP62=DZETA(KLOW)=(CCS*DDZXL=(TO**2+X1XX(J,I)**2)+T1+TA11+CCS+
2948. DDZYL=TO+T1+TA11)
2949. DANP62=DDPL+R1KUP62+TA33P+DDPLP62+R1KU=TA33P+2+X1XX1(J,I)=QZINF=
2950. R1KUP62/DZETAC(K)
2951. DAN = DANP62
2952.
2953. C P63
2954. ELSEIF (CND[II,JJ,KK,I,J,KM1]) THEN
2955. P87P63 = DX11(I)*S
2956. P88P63 = DX11(IM1)
2957. P822P63 = (-AJ2(J)+AJ1(J))/2.0
2958. P823P63 = (-AJ2(J)+AJ1(J))/2.0
2959. P831P63 = DC5/2.0
2960. P832P63 = DC5/2.0
2961. P837P63 = DC4/2.0
2962. P838P63 = DC4/2.0
2963. P852P63 = DX11(I)*A11R(J,I)*S*(-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0
2964. P853P63 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/2.0+DX11(IM1)*A11R(J,IM1)
2965. P867P63 = DX11(I)*XIYIP(J,I)*S*(-AJ2(J)+AJ1(J))/2.0
2966. P868P63 = DX11(IM1)*XIYIP(J,IM1)*(-AJ2(J)+AJ1(J))/2.0
2967. TO=G2-1
2968. T1=(G1*(PB17+P862+P82+P847+P832**2)+1)**TO
2969. T2=(G1*(P853+P88+P823+P868+P838**2)+1)**TO
2970. T3=P853+P88P63+P853P63+P88+P823+P868P63+P823P63+P868+2+P838+
2971. P838P63
2972. R1KUP63=(S=(SG(I,J,KM1))*T3+G1+G2+T2+T3+S+G1+G2*(G1*(P852+P87+P822+
2973. P867+P837**2)+1)**TO+(P852+P87P63+P852P63+P87+P822+P867P63+
2974. P822P63+P867+2+P837+P837P63))*G1+G2+T2+T3)+3*(SG(I,J,K)+2+G1+G2+
2975. P832+P832P63+T1+S+2+G1+G2+P831+P831P63+(G1*(PB18+P861+P81+P848+
2976. P831**2)+1)**TO)+2+G1+G2+P832+P832P63+T1)+G1+G2+SG(IM1,J,KM1))*T2+
2977. T3+S+8+G1+G2+SG(IM1,J,K)+P832+P832P63+T1))/4.0
2978. TO=XIYX(J,I)
2979. T1=S**2
2980. T2=CCS+T1+TA12+CCS+S+TA11
2981. T3=CCS+S+TAJ1
2982. T4=CCS+T1+TAJ2
2983. DDPLP63=DZETA(KLOW)=(DDZXL=(TO*(T4+T3)+(TO**2+X1XX(J,I)**2)+T2)+
2984. DDZYL=(T4+T3+TO+T2))
2985. DANP63=DDPL+R1KUP63+TA33P+DDPLP63+R1KU=TA33P+2+X1XX1(J,I)=QZINF=
2986. R1KUP63/DZETAC(K)
2987. DAN = DANP63
2988.
2989. C P64
2990. ELSEIF (CND[II,JJ,KK,IP1,J,KM1]) THEN
2991. P87P64 = DX11(I)
2992. P822P64 = (-AJ2(J)+AJ1(J))/2.0
2993. P831P64 = DC5/2.0
2994. P837P64 = DC4/2.0
2995. P852P64 = (-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0+DX11(I)*A11R(J,I)
2996. P867P64 = DX11(I)*XIYIP(J,I)*(-AJ2(J)+AJ1(J))/2.0
2997. TO=G2-1
2998. R1KUP64=(G1+G2+SG(I,J,KM1))*T1+(G1*(P852+P87+P822+P867+P837**2)+1)**TO
2999. +(P852+P87P64+P852P64+P87+P822+P867P64+P822P64+P867+2+P837+
3000. P837P64)*S+6+G1+G2+SG(I,J,K)+P831+P831P64+(G1*(PB18+P861+P81+P848+
3001. P831**2)+1)**TO)/4.0
3002. TO=XIYX(J,I)
3003. DDPLP64=DZETA(KLOW)=(CCS*DDZXL=(TO**2+X1XX(J,I)**2)+S+TA12+CCS+
3004. DDZYL=TO+S+TA12)
3005. DANP64=DDPL+R1KUP64+TA33P+DDPLP64+R1KU=TA33P+2+X1XX1(J,I)=QZINF=
3006. R1KUP64/DZETAC(K)
3007. DAN = DANP64
3008.
3009. C P65
3010. ELSEIF (CND[II,JJ,KK,IM2,JP1,KM1]) THEN
3011. P824P65 = AJ2(J)/2.0
3012. P854P65 = AJ2(J)*XIYIP(J,IM2)/2.0
3013. P869P65 = AJ2(J)/2.0
3014. TO=P854P65+P89+P824+P869P65+P824P65+P869
3015. T1=(G1*(PB54+P89+P824+P869+P839**2)+1)**(G2-1)
3016. R1KUP65=(S=(G1+G2+SG(IM1,J,KM1))*TO+T1+S+G1+G2+TO+T1))/4.0
3017. DANP65=DDPL+R1KUP65+TA33P+2+X1XX1(J,I)=QZINF=R1KUP65/DZETAC(K)
3018. DAN = DANP65
3019.
3020. C P67
3021. ELSEIF (CND[II,JJ,KK,IM1,JP1,KM1]) THEN
3022. P823P67 = AJ2(J)/2.0
3023. P824P67 = AJ2(J)/2.0
3024. P853P67 = AJ2(J)*XIYIP(J,IM1)/2.0
3025. P854P67 = AJ2(J)*XIYIP(J,IM2)/2.0
3026. P868P67 = AJ2(J)/2.0
3027. P869P67 = AJ2(J)/2.0
3028. TO=P853P67+P88+P823+P868P67+P823P67+P868
3029. T1=G2-1
3030. T2=(G1*(P853+P88+P823+P868+P838**2)+1)**T1
3031. T3=G1+G2+TO+T2
3032. T4=P854P67+P89+P824+P869P67+P824P67+P869
3033. T5=(G1*(P854+P89+P824+P869+P839**2)+1)**T1
3034. R1KUP67=(S=(SG(IM1,J,KM1))*T4+G1+G2+T4+T5+S+G1+G2
3035. *SG(I,J,KM1))*TO+T2+S+T3))/4.0
3036. DANP67=DDPL+R1KUP67+TA33P+2+X1XX1(J,I)=QZINF=R1KUP67/DZETAC(K)
3037. DAN = DANP67
3038.
3039. C P68
3040. ELSEIF (CND[II,JJ,KK,I,JP1,KM1]) THEN
3041. P822P68 = AJ2(J)/2.0

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3038. PB23P68 = AJ2(J)/2.0
3039. PB52P68 = AJ2(J)*XIYIP(J,I)/2.0
3040. PB53P68 = AJ2(J)*XIYIP(J,IM1)/2.0
3041. PB67P68 = AJ2(J)/2.0
3042. PB68P68 = AJ2(J)/2.0
3043. TO=PB53P68+PB8+PB23+PB68P68+PB23P68+PB88
3044. T1=G2-1
3045. T2=(G1=(PB53+PB8+PB23+PB68+PB38**2)+1)**T1
3046. R1KUP68=(S=(SG(I,J,KM1))=(G1=G2=TO=T2=S+G1=G2=(PB52P68+PB7+PB22+
3047. PB67P68+PB22P68+PB7))=(G1=(PB52+PB7+PB22+PB67**2)+1)**T1)+G1
3048. =C2=TO=T2)=G1=G2=SG(IM1,J,KM1)+TO=T2=S)/4.0
3049. DDPLP68=DZETA(KLOW)=(CC5=DDZXL=XIYX(J,I)+S=TAJ2+CC5=DDZYL=S+TAJ2)
3050. DANP68=DDPL+R1KUP68+TA33P+DDPLP68+R1KU+TA33P+2*XIXXI(J,I)=OZINF+
3051. R1KUP68/DZETAC(K)
3052. DAN = DANP68
3053.
3054. C P69
3055. ELSEIF (CND(I1,JJ,KK,IP1,JP1,KM1)) THEN
3056. PB22P69 = AJ2(J)/2.0
3057. PB52P69 = AJ2(J)*XIYIP(J,I)/2.0
3058. PB67P69 = AJ2(J)/2.0
3059. R1KUP69=G1=G2=SG(I,J,KM1)=(PB52P69+PB7+PB22+PB67P69+PB22P69+PB67)*
3060. (G1=(PB52+PB7+PB22+PB67**2)+1)**(G2-1)+S/4.0
3061. DANP69=DDPL+R1KUP69+TA33P+2*XIXXI(J,I)=OZINF+R1KUP69/DZETAC(K)
3062. DAN = DANP69
3063.
3064. C P81
3065. ELSEIF (CND(I1,JJ,KK,IM2,JM1,K)) THEN
3066. PB18P81 = -(1.0/2.0*AJ1(J))
3067. PB48P81 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM2))
3068. PB63P81 = -(1.0/2.0*AJ1(J))
3069. TO=(G1=(PB18+PB63+PB3+PB48+PB33**2)+1)**(G2-1)
3070. T1=PB18+PB63P81+PB18P81+PB63+PB3+PB48P81
3071. R1KUP81=3.0/4.0*(G1=G2=SG(IM1,J,K)=TO=T1=S+G1=G2=TO=T1)
3072. DANP81=DDPL+R1KUP81+TA33P+2*XIXXI(J,I)=OZINF+R1KUP81/DZETAC(K)
3073. DAN = DANP81
3074.
3075. C P82
3076. ELSEIF (CND(I1,JJ,KK,IM1,JM1,K)) THEN
3077. PB17P82 = -(1.0/2.0*AJ1(J))
3078. PB18P82 = -(1.0/2.0*AJ1(J))
3079. PB47P82 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
3080. PB48P82 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM2))
3081. PB62P82 = -(1.0/2.0*AJ1(J))
3082. PB63P82 = -(1.0/2.0*AJ1(J))
3083. TO=G2-1
3084. T1=(G1=(PB17+PB62+PB2+PB47+PB32**2)+1)**TO
3085. T2=PB17+PB62P82+PB17P82+PB62+PB2+PB47P82
3086. T3=G1=G2+T1+T2
3087. T4=(G1=(PB18+PB63+PB3+PB48+PB33**2)+1)**TO
3088. T5=PB18+PB63P82+PB18P82+PB63+PB3+PB48P82
3089. R1KUP82=(3=(SG(IM1,J,K)=(G1=G2+T4+T5+S+T3)+G1=G2+T4+T5)+3*(G1=G2+
3090. SG(I,J,K)=T1=T2=S+T3))/4.0
3091. DANP82=DDPL+R1KUP82+TA33P+2*XIXXI(J,I)=OZINF+R1KUP82/DZETAC(K)
3092. DAN = DANP82
3093.
3094. C P83
3095. ELSEIF (CND(I1,JJ,KK,I,JM1,K)) THEN
3096. PB18P83 = -(1.0/2.0*AJ1(J))
3097. PB17P83 = -(1.0/2.0*AJ1(J))
3098. PB48P83 = -(1.0/2.0*AJ1(J)*XIYIP(J,I))
3099. PB47P83 = -(1.0/2.0*AJ1(J)*XIYIP(J,IM1))
3100. PB61P83 = -(1.0/2.0*AJ1(J))
3101. PB62P83 = -(1.0/2.0*AJ1(J))
3102. TO=G2-1
3103. T1=(G1=(PB17+PB62+PB2+PB47+PB32**2)+1)**TO
3104. T2=PB17+PB62P83+PB17P83+PB62+PB2+PB47P83
3105. R1KUP83=(3=(SG(I,J,K)=(G1=G2+T1=T2=S+G1=G2=(PB18+PB61+PB1+PB48+
3106. PB31**2)+1)**TO=(PB18+PB61P83+PB18P83+PB61+PB1+PB48P83)+G1=G2+
3107. T1=T2)+3*(G1=G2=SG(IM1,J,K)=T1=T2))/4.0
3108. DDPLP83=DZETA(KLOW)=(CC4=DDZXL=XIYX(J,I)+S=TAJ1+CC4=DDZYL=S+TAJ1)
3109. DANP83=DDPL+R1KUP83+TA33P+DDPLP83+R1KU+TA33P+2*XIXXI(J,I)=OZINF+
3110. R1KUP83/DZETAC(K)
3111. DAN = DANP83
3112.
3113. C P84
3114. ELSEIF (CND(I1,JJ,KK,IP1,JM1,K)) THEN
3115. PB18P84 = -(1.0/2.0*AJ1(J))
3116. PB48P84 = -(1.0/2.0*AJ1(J)*XIYIP(J,I))
3117. PB61P84 = -(1.0/2.0*AJ1(J))
3118. R1KUP84=3.0/4.0*(G1=G2=SG(I,J,K)=(G1=(PB18+PB61+PB1+PB48+PB31**2)+1)*
3119. (G1=(PB18+PB61P84+PB18P84+PB61+PB1+PB48P84)
3120. )=(G2-1)+S=TAJ1+CC4=DDZYL=S+TAJ1)
3121. DANP84=DDPL+R1KUP84+TA33P+2*XIXXI(J,I)=OZINF+R1KUP84/DZETAC(K)
3122. DAN = DANP84
3123.
3124. C P86
3125. ELSEIF (CND(I1,JJ,KK,IM2,J,K)) THEN
3126. PB3P86 = DXII(IM2)=S
3127. PB18P86 = (-AJ2(J)+AJ1(J))/2.0
3128. PB33P86 = DC4/2.0
3129. PB48P86 = DXII(IM2)=A11R(J,IM2)=S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/
3130. 2.0
3131. PB63P86 = DXII(IM2)=XIYIP(J,IM2)=S+(-AJ2(J)+AJ1(J))/2.0
3132. TO=(G1=(PB18+PB63+PB3+PB48+PB33**2)+1)**(G2-1)
3133. T1=PB18+PB63P86+PB18P86+PB63+PB3+PB48P86+PB33P86+PB48+2+PB33=
3134. PB33P86
3135. R1KUP86=3.0/4.0*(G1=G2=SG(IM1,J,K)=TO=T1=S+G1=G2=TO=T1)
3136. DANP86=DDPL+R1KUP86+TA33P+2*XIXXI(J,I)=OZINF+R1KUP86/DZETAC(K)
3137. DAN = DANP86
3138.
3139. C P87
3140. ELSEIF (CND(I1,JJ,KK,IM1,J,K)) THEN
3141. PB2P87 = DXII(IM1)=S
3142. PB3P87 = DXII(IM2)
3143. PB17P87 = (-AJ2(J)+AJ1(J))/2.0
3144. PB18P87 = (-AJ2(J)+AJ1(J))/2.0
3145. PB32P87 = DC4/2.0
3146. PB33P87 = DC4/2.0
3147. PB47P87 = DXII(IM1)=A11R(J,IM1)=S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/
3148. 2.0
3149. PB48P87 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/2.0+DXII(IM2)=A11R(J,IM2)
3150. PB62P87 = DXII(IM1)*XIYIP(J,IM1)=S+(-AJ2(J)+AJ1(J))/2.0
3151. PB63P87 = DXII(IM2)*XIYIP(J,IM2)=(-AJ2(J)+AJ1(J))/2.0
3152. TO=G2-1
3153. T1=(G1=(PB17+PB62+PB2+PB47+PB32**2)+1)**TO
3154. T2=PB17+PB62P87+PB17P87+PB62+PB2+PB47P87+PB2P87+PB47+2+PB32=
3155. PB32P87
3156. T3=G1=G2+T1+T2
3157. T4=(G1=(PB18+PB63+PB3+PB48+PB33**2)+1)**TO
3158. T5=PB18+PB63P87+PB18P87+PB63+PB3+PB48P87+PB3P87+PB48+2+PB33=
3159. PB33P87
3160. R1KUP87=(3=(SG(IM1,J,K)=(G1=G2+T4+T5+S+T3)+G1=G2+T4+T5)+3*(G1=G2+
3161. SG(I,J,K)=T1=T2=S+T3))/4.0
3162. TO=XIYX(J,I)
3163. DDPLP87=DZETA(KLOW)=(CC4=DDZXL=(TO**2*XIXX(J,I)**2)+S=TAI1+CC4=
3164. DDZYL+TO=S+TAI1)
3165. DANP87=DDPL+R1KUP87+TA33P+DDPLP87+R1KU+TA33P+2*XIXXI(J,I)=OZINF+
3166. R1KUP87/DZETAC(K)
3167. DAN = DANP87
3168.
3169. C P88
3170. ELSEIF (CND(I1,JJ,KK,I,J,K)) THEN
3171. PB1P88 = DXII(I)=S
3172. PB2P88 = DXII(IM1)
3173. PB18P88 = (-AJ2(J)+AJ1(J))/2.0
3174. PB17P88 = (-AJ2(J)+AJ1(J))/2.0
3175. PB31P88 = DC4/2.0
3176. PB32P88 = DC4/2.0
3177. PB48P88 = DXII(I)=A11R(J,I)=S+(-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0
3178. PB47P88 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/2.0+DXII(IM1)=A11R(J,IM1)

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3158. PR61P88 = DX11(I)=XIYIP(J,I)=S+[-AJ2(J)+AJ1(J)]/2.0
3159. PR62P88 = DX11(IM1)=XIYIP(J,IM1)+[-AJ2(J)+AJ1(J)]/2.0
3170. TO=G2-1
3171. T1=[G1=(PB17=PB82+PB2=PB47+PB32==2)+1]==TO
3172. T2=PB17+PB82P88+PB17P88+PB82+PB2+PB47P88+PB2P88+PB47+2+PB32+
3173. PB32P88
3174. R1KUP88=[3*(SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2=[G1=(PB18+PB81+PB1=PB48
3175. +PB31==2)+1]==TO=(PB18+PB81P88+PB18P88+PB81+PB1+PB48P88+PB1P88
3176. +PB48+2+PB31=PB31P88))+G1+G2+T1+T2)+3+G1+G2+SG(IM1,J,K)+T1+T2)]/4.0
3177. TO=XIYX(J,I)
3178. T1=CC4=S+TA12+CC4+TA11
3179. T2=CC4+TAJ1
3180. T3=CC4+S+TAJ2
3181. DDPLP88=DZETA(KLOW)=(DDZXL=[TO=(T3+T2)+[TO==2+XIXX(J,I)==2]=T1]+
3182. DDZYL=[T3+T2+TO+T1]))
3183. DANP88=DDPL+R1KUP88+TA33P+DDPLP88+R1KU=TA33P+2+XIXX(J,I)=QZINF+
3184. R1KUP88/DZETAC(K)
3185. DAN = DANP88
3186.
3187. C P88
3188. ELSEIF (CND(II,JJ,KK,IP1,J,K)) THEN
3189. PR1P88 = DX11(I)
3190. PR16P88 = [-AJ2(J)+AJ1(J)]/2.0
3191. PR31P88 = DC4/2.0
3192. PR46P88 = [-AJ2(J)+AJ1(J)]=XIYIP(J,I)/2.0+DX11(I)+A11R(J,I)
3193. PR61P88 = DX11(I)=XIYIP(J,I)+[-AJ2(J)+AJ1(J)]/2.0
3194. R1KUP88=[3*(SG(I,J,K)=(G1+G2+SG(I,J,K)=[G1=(PB18+PB81+PB1=PB48+PB31==2)+1
3195. ]==[G2-1]=(PB18+PB81P88+PB18P88+PB81+PB1+PB48P88+PB1P88+PB48+2+
3196. PB31=PB31P88)
3197. TO=XIYX(J,I)
3198. DDPLP88=DZETA(KLOW)=(CC4=DDZXL=[TO==2+XIXX(J,I)=2]=TA12+CC4=DDZYL
3199. +TO+TA12)
3200. DANP88=DDPL+R1KUP88+TA33P+DDPLP88+R1KU=TA33P+2+XIXX(J,I)=QZINF+
3201. R1KUP88/DZETAC(K)
3202. DAN = DANP88
3203.
3204. C P81
3205. ELSEIF (CND(II,JJ,KK,IM2,JP1,K)) THEN
3206. PR18P81 = AJ2(J)/2.0
3207. PR48P81 = AJ2(J)=XIYIP(J,IM2)/2.0
3208. PR83P81 = AJ2(J)/2.0
3209. TO=[G1=(PB18+PB83+PB3=PB48+PB33==2)+1]==[G2-1]
3210. T1=PB18+PB83P81+PB18P81+PB83+PB3=PB48P81
3211. R1KUP81=[3*(SG(I,J,K)=(G1+G2+SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1)
3212. DANP81=DDPL+R1KUP81+TA33P+2+XIXX(J,I)=QZINF+R1KUP81/DZETAC(K)
3213. DAN = DANP81
3214.
3215. C P82
3216. ELSEIF (CND(II,JJ,KK,IM1,JP1,K)) THEN
3217. PR17P82 = AJ2(J)/2.0
3218. PR18P82 = AJ2(J)/2.0
3219. PR47P82 = AJ2(J)=XIYIP(J,IM1)/2.0
3220. PR48P82 = AJ2(J)=XIYIP(J,IM2)/2.0
3221. PR82P82 = AJ2(J)/2.0
3222. PR83P82 = AJ2(J)/2.0
3223. TO=G2-1
3224. T1=[G1=(PB17=PB82+PB2=PB47+PB32==2)+1]==TO
3225. T2=PB17+PB82P82+PB17P82+PB82+PB2+PB47P82
3226. T3=G1+G2+T1+T2
3227. T4=[G1=(PB18+PB83+PB3=PB48+PB33==2)+1]==TO
3228. T5=PB18+PB83P82+PB18P82+PB83+PB3=PB48P82
3229. R1KUP82=[3*(SG(IM1,J,K)=[G1+G2+T4+T5+S+T3]+G1+G2+T4+T5)+3=(G1+G2+
3230. SG(I,J,K)+T1+T2+S+T3)]/4.0
3231. DANP82=DDPL+R1KUP82+TA33P+2+XIXX(J,I)=QZINF+R1KUP82/DZETAC(K)
3232. DAN = DANP82
3233.
3234. C P83
3235. ELSEIF (CND(II,JJ,KK,I,JP1,K)) THEN
3236. PR18P83 = AJ2(J)/2.0
3237. PR17P83 = AJ2(J)/2.0
3238. PR48P83 = AJ2(J)=XIYIP(J,I)/2.0
3239. PR47P83 = AJ2(J)=XIYIP(J,IM1)/2.0
3240. PR81P83 = AJ2(J)/2.0
3241. PR82P83 = AJ2(J)/2.0
3242. TO=G2-1
3243. T1=[G1=(PB17=PB82+PB2=PB47+PB32==2)+1]==TO
3244. T2=PB17+PB82P83+PB17P83+PB82+PB2+PB47P83
3245. R1KUP83=[3*(SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2=[G1=(PB18+PB81+PB1=PB48
3246. +PB31==2)+1]==TO=(PB18+PB81P83+PB18P83+PB81+PB1+PB48P83))+G1+G2+
3247. T1+T2)+3+G1+G2+SG(IM1,J,K)+T1+T2)]/4.0
3248. DDPLP83=DZETA(KLOW)=(CC4=DDZXL=XIYX(J,I)=TAJ2+CC4=DDZYL+TAJ2)
3249. DANP83=DDPL+R1KUP83+TA33P+DDPLP83+R1KU=TA33P+2+XIXX(J,I)=QZINF+
3250. R1KUP83/DZETAC(K)
3251. DAN = DANP83
3252.
3253. C P84
3254. ELSEIF (CND(II,JJ,KK,IP1,JP1,K)) THEN
3255. PR18P84 = AJ2(J)/2.0
3256. PR48P84 = AJ2(J)=XIYIP(J,I)/2.0
3257. PR81P84 = AJ2(J)/2.0
3258. R1KUP84=[3*(SG(I,J,K)=(G1+G2+SG(I,J,K)=[G1=(PB18+PB81+PB1=PB48+PB31==2)+1
3259. ]==[G2-1]=(PB18+PB81P84+PB18P84+PB81+PB1+PB48P84))+G1+G2+
3260. DANP84=DDPL+R1KUP84+TA33P+2+XIXX(J,I)=QZINF+R1KUP84/DZETAC(K)
3261. DAN = DANP84
3262. ENDIF
3263.
3264. C
3265. RETURN
3266. END
3267. SUBROUTINE R3(J,I,K,JJ,II,KK,DAN)
3268. C
3269. RMDER3.FOR
3270. C
3271. INCLUDE (INTRO)
3272. C
3273. P
3274. C
3275.
3276. P36 = P(J,KM2,IM2)
3277. P37 = P(J,KM2,IM1)
3278. P38 = P(J,KM2,I)
3279. P39 = P(J,KM2,IP1)
3280. P56 = P(JM1,KM1,IM2)
3281. P57 = P(JM1,KM1,IM1)
3282. P58 = P(JM1,KM1,I)
3283. P59 = P(JM1,KM1,IP1)
3284. P61 = P(J,KM1,IM2)
3285. P62 = P(J,KM1,IM1)
3286. P63 = P(J,KM1,I)
3287. P64 = P(J,KM1,IP1)
3288. P66 = P(JP1,KM1,IM2)
3289. P67 = P(JP1,KM1,IM1)
3290. P68 = P(JP1,KM1,I)
3291. P69 = P(JP1,KM1,IP1)
3292. P81 = P(JM1,K,IM2)
3293. P82 = P(JM1,K,IM1)
3294. P83 = P(JM1,K,I)
3295. P84 = P(JM1,K,IP1)
3296. P111 = P(J,KP1,IM2)
3297. P112 = P(J,KP1,IM1)
3298. P113 = P(J,KP1,I)
3299. P114 = P(J,KP1,IP1)

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3300. P182 = P(J,KLOW-2,ITE)
3301. P183 = P(J,KLOW-1,ITE)
3302. P184 = P(J,KLOW,ITE)
3303. P185 = P(J,KUP,ITE)
3304. P186 = P(J,KUP+1,ITE)
3305. P187 = P(J,KUP+2,ITE)
3306.
3307. C
3308. C
3309. C
3310. PC1 = DX11(I1)=[P88+S+P89]+OXINF/XIXIP(J,I)
3311. PC2 = DX11(IM1)=[P87+S+P88]+OXINF/XIXIP(J,IM1)
3312. PC3 = DX11(IM2)=[P86+S+P87]+OXINF/XIXIP(J,IM2)
3313. PC4 = DX11(I1)=[P83+S+P84]+OXINF/XIXIP(J,I)
3314. PC5 = DX11(IM1)=[P82+S+P83]+OXINF/XIXIP(J,IM1)
3315. PC6 = DX11(IM2)=[P81+S+P82]+OXINF/XIXIP(J,IM2)
3316. PC16 = XIXIP(J,I)+OXINF+S/XIXIP(J,I)+[AJ2(J)=[P94+P93-P89-P88]+AJ1(J)=[P69+P68-P84-P83]]/2.0
3317. PC17 = XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[P93+P92-P86-P87]+AJ1(J)=[P88+P87-P83-P82]]/2.0
3318. PC18 = XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[P92+P91-P87-P86]+AJ1(J)=[P87+P86-P82-P81]]/2.0
3319. PC14 = XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[P92+P91-P87-P86]+AJ1(J)=[P87+P86-P82-P81]]/2.0
3320. PC22 = XIXIP(J,I)+OXINF+S/XIXIP(J,I)+[AJ2(J)=[P69+P68-P84-P83]+AJ1(J)=[P64+P63-P59-P58]]/2.0
3321. PC23 = XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[P68+P67-P63-P62]+AJ1(J)=[P63+P62-P54-P57]]/2.0
3322. PC24 = XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[P67+P66-P62-P61]+AJ1(J)=[P62+P61-P57-P56]]/2.0
3323. PC31 = -(A1K(K)=[CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+P185+CC5+P183])OXINF+(A1K(K)=[P89+P88-P84-P83]+A2K(K)=[-P89-P88+P114+P113])/2.0
3324. PC32 = -(A1K(K)=[CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+P185+CC5+P183])OXINF+(A1K(K)=[P88+P87-P83-P82]+A2K(K)=[-P88-P87+P113+P112])/2.0
3325. PC33 = -(A1K(K)=[CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+P185+CC5+P183])OXINF+(A1K(K)=[P87+P86-P82-P81]+A2K(K)=[-P87-P86+P112+P111])/2.0
3326. PC37 = -(A1K(KM1)=[CC2+P188+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+P185+CC5+P183])OXINF+(A2K(KM1)=[P89+P88-P84-P83]+A1K(KM1)=[P84+P83-P39-P36])/2.0
3327. PC38 = -(A1K(KM1)=[CC2+P188+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+P185+CC5+P183])OXINF+(A2K(KM1)=[P88+P87-P83-P82]+A1K(KM1)=[P83+P82-P38-P37])/2.0
3328. PC39 = -(A1K(KM1)=[CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+P185+CC5+P183])OXINF+(A2K(KM1)=[P87+P86-P82-P81]+A1K(KM1)=[P82+P81-P37-P36])/2.0
3329. PC46 = A11R(J,I)=[DX11(I1)=[P88+S+P88]+OXINF/XIXIP(J,I)]+XIXIP(J,I)+[XIXIP(J,I)+OXINF+S/XIXIP(J,I)+[AJ2(J)=[P94+P93-P89-P88]+AJ1(J)=[P89+P88-P84-P83]]/2.0]
3330. PC47 = A11R(J,IM1)=[DX11(IM1)=[P87+S+P88]+OXINF/XIXIP(J,IM1)]+XIXIP(J,IM1)+[XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[P93+P92-P88-P87]+AJ1(J)=[P88+P87-P83-P82]]/2.0]
3331. PC48 = A11R(J,IM2)=[DX11(IM2)=[P86+S+P87]+OXINF/XIXIP(J,IM2)]+XIXIP(J,IM2)+[XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[P92+P91-P87-P86]+AJ1(J)=[P87+P86-P82-P81]]/2.0]
3332. PC52 = A11R(J,I)=[DX11(I1)=[P83+S+P84]+OXINF/XIXIP(J,I)]+XIXIP(J,I)+[XIXIP(J,I)+OXINF+S/XIXIP(J,I)+[AJ2(J)=[P69+P68-P84-P83]+AJ1(J)=[P64+P63-P59-P58]]/2.0]
3333. PC53 = A11R(J,IM1)=[DX11(IM1)=[P82+S+P83]+OXINF/XIXIP(J,IM1)]+XIXIP(J,IM1)+[XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[P68+P67-P63-P62]+AJ1(J)=[P63+P62-P54-P57]]/2.0]
3334. PC54 = A11R(J,IM2)=[DX11(IM2)=[P81+S+P82]+OXINF/XIXIP(J,IM2)]+XIXIP(J,IM2)+[XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[P67+P66-P62-P61]+AJ1(J)=[P62+P61-P57-P56]]/2.0]
3335. PC61 = XIXIP(J,I)=[DX11(I1)=[P88+S+P88]+OXINF/XIXIP(J,I)]+XIXIP(J,I)+[XIXIP(J,I)+OXINF+S/XIXIP(J,I)+[AJ2(J)=[P94+P93-P89-P88]+AJ1(J)=[P89+P88-P84-P83]]/2.0]
3336. PC62 = XIXIP(J,IM1)=[DX11(IM1)=[P87+S+P88]+OXINF/XIXIP(J,IM1)]+XIXIP(J,IM1)+[XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[P93+P92-P88-P87]+AJ1(J)=[P88+P87-P83-P82]]/2.0]
3337. PC63 = XIXIP(J,IM2)=[DX11(IM2)=[P86+S+P87]+OXINF/XIXIP(J,IM2)]+XIXIP(J,IM2)+[XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[P92+P91-P87-P86]+AJ1(J)=[P87+P86-P82-P81]]/2.0]
3338. PC67 = XIXIP(J,I)=[DX11(I1)=[P83+S+P84]+OXINF/XIXIP(J,I)]+XIXIP(J,I)+[XIXIP(J,I)+OXINF+S/XIXIP(J,I)+[AJ2(J)=[P69+P68-P84-P83]+AJ1(J)=[P64+P63-P59-P58]]/2.0]
3339. PC68 = XIXIP(J,IM1)=[DX11(IM1)=[P82+S+P83]+OXINF/XIXIP(J,IM1)]+XIXIP(J,IM1)+[XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[P68+P67-P63-P62]+AJ1(J)=[P63+P62-P54-P57]]/2.0]
3340. PC69 = XIXIP(J,IM2)=[DX11(IM2)=[P81+S+P82]+OXINF/XIXIP(J,IM2)]+XIXIP(J,IM2)+[XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[P67+P66-P62-P61]+AJ1(J)=[P62+P61-P57-P56]]/2.0]
3341.
3342. C
3343. C
3344. C
3345. R2KW, CIR
3346. TO=[G1=(PC17+PC62+PC2+PC47+PC32==2)-1]==G2
3347. T1=[G1=(PC18+PC63+PC3+PC46+PC33==2)-1]==G2
3348. T2=[G1=(PC53+PC8+PC23+PC86+PC38==2)-1]==G2
3349. T3=[G1=(PC54+PC9+PC24+PC89+PC39==2)-1]==G2
3350. R2KW=[SG(IM1,J,KM1)=[T3+S+T2]+SG(I,J,KM1)=[T2+S+G1=(PC52+PC7+PC22+PC87+PC37==2)+1]==G2]+SG(IM1,J,K)=[T1+S+T0]+SG(I,J,K)=[T0+S+G1=(PC16+PC61+PC1+PC46+PC31==2)+1]==G2]+T3+T2+T1+T0/4.0
3351. CIR=CIR(CJ)
3352.
3353. C
3354. C
3355. C
3356. DER3
3357.
3358. C P36
3359. IF [CND[I1,JJ,KK,IM2,J,KM2]] THEN
3360. PC38P36 = -(1.0/2.0*A1K(KM1))
3361. TO=[G1=(PC54+PC9+PC24+PC89+PC39==2)+1]==G2-1
3362. R2KWP36=[2+G1+G2+SG(IM1,J,KM1)=[PC39+PC38P36+T0+S+2+G1+G2+PC39+PC38P36+T0]/4.0
3363. DANP36=CIR+R2KWP36+TA33M
3364. DAN = DANP36
3365.
3366. C P37
3367. ELSEIF [CND[I1,JJ,KK,IM1,J,KM2]] THEN
3368. PC38P37 = -(1.0/2.0*A1K(KM1))
3369. PC39P37 = -(1.0/2.0*A1K(KM1))
3370. TO=G2-1
3371. T1=[G1=(PC53+PC8+PC23+PC86+PC38==2)+1]==T0
3372. T2=2+G1+G2+PC38+PC38P37+T1
3373. T3=[G1=(PC54+PC9+PC24+PC89+PC39==2)+1]==T0
3374. R2KWP37=[SG(IM1,J,KM1)=[2+G1+G2+PC38+PC38P37+T3+S+T2]+2+G1+G2+SG(I,J,KM1)=[PC38+PC38P37+T1+S+2+G1+G2+PC38+PC38P37+T3+T2]/4.0
3375. DANP37=CIR+R2KWP37+TA33M
3376. DAN = DANP37
3377.
3378. C P38
3379. ELSEIF [CND[I1,JJ,KK,I,J,KM2]] THEN
3380. PC37P38 = -(1.0/2.0*A1K(KM1))
3381. PC38P38 = -(1.0/2.0*A1K(KM1))
3382. TO=G2-1
3383. T1=[G1=(PC53+PC8+PC23+PC86+PC38==2)+1]==T0
3384. R2KWP38=[SG(I,J,KM1)=[2+G1+G2+PC38+PC38P38+T1+S+2+G1+G2+PC37+PC37P38+G1+G2+SG(IM1,J,KM1)=[PC38+PC38P38+T1+2+G1+G2+PC38+PC38P38+T1]/4.0
3385. DANP38=CIR+R2KWP38+TA33M
3386. DAN = DANP38
3387.
3388. C P39
3389. ELSEIF [CND[I1,JJ,KK,IP1,J,KM2]] THEN
3390. PC37P39 = -(1.0/2.0*A1K(KM1))
3391. R2KWP39=G1+G2+SG(I,J,KM1)=[PC37+PC37P39]+G1=[PC52+PC7+PC22+PC87+PC37+2]+1]==G2-1/2.0
3392. DANP39=CIR+R2KWP39+TA33M
3393. DAN = DANP39
3394.

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3432 C P56
3433 ELSEIF (CND[I1,JJ,KK,IM2,JM1,KM1]) THEN
3434 PC24P56 = -(1.0/2.0*AJ1[J])
3435 PC54P56 = -(1.0/2.0*AJ1[J])*XIYIP[J,IM2])
3436 PC89P56 = -(1.0/2.0*AJ1[J])
3437 TO=PC54P56+PC8+PC24=PC89P56+PC24P56+PC69
3438 T1=(G1=(PC54+PC8+PC24=PC89+PC39**2)+1)**(G2-1)
3439 R2KWP56=(G1=G2*SG[IM1,J,KM1]*TO=T1*S+G1=G2*TO=T1)/4.0
3440 DANP56=CIR=R2KWP56*TA33M
3441 DAN = DANP56
3442
3443 C P57
3444 ELSEIF (CND[I1,JJ,KK,IM1,JM1,KM1]) THEN
3445 PC23P57 = -(1.0/2.0*AJ1[J])
3446 PC24P57 = -(1.0/2.0*AJ1[J])
3447 PC53P57 = -(1.0/2.0*AJ1[J])*XIYIP[J,IM1])
3448 PC54P57 = -(1.0/2.0*AJ1[J])*XIYIP[J,IM2])
3449 PC89P57 = -(1.0/2.0*AJ1[J])
3450 TO=PC53P57+PC8+PC23=PC89P57+PC23P57+PC68
3451 T1=G2-1
3452 T2=(G1=(PC53+PC8+PC23=PC89+PC38**2)+1)**T1
3453 T3=G1=G2*TO=T2
3454 T4=PC54P57+PC8+PC24=PC89P57+PC24P57+PC69
3455 T5=(G1=(PC54+PC8+PC24=PC89+PC39**2)+1)**T1
3456 R2KWP57=(SG[IM1,J,KM1])*(G1=G2*T4=T5*S+T3)+G1=G2*SG[I,J,KM1]*TO=T2
3457 S=G1=G2*T4=T5*T3)/4.0
3458 DANP57=CIR=R2KWP57*TA33M
3459 DAN = DANP57
3460
3461 C P58
3462 ELSEIF (CND[I1,JJ,KK,I,JM1,KM1]) THEN
3463 PC22P58 = -(1.0/2.0*AJ1[J])
3464 PC23P58 = -(1.0/2.0*AJ1[J])
3465 PC52P58 = -(1.0/2.0*AJ1[J])*XIYIP[J,I])
3466 PC53P58 = -(1.0/2.0*AJ1[J])*XIYIP[J,IM1])
3467 PC67P58 = -(1.0/2.0*AJ1[J])
3468 PC89P58 = -(1.0/2.0*AJ1[J])
3469 TO=PC53P58+PC8+PC23=PC67P58+PC23P58+PC68
3470 T1=G2-1
3471 T2=(G1=(PC53+PC8+PC23=PC67+PC38**2)+1)**T1
3472 R2KWP58=(SG[I,J,KM1])*(G1=G2*TO=T2*S+G1=G2*(PC52P58+PC7+PC22=
3473 PC67P58+PC22P58+PC67)*(G1=(PC52+PC7+PC22=PC67+PC37**2)+1)**T1)+G1
3474 =G2*SG[IM1,J,KM1]*TO=T2-G1=G2*TO=T2)/4.0
3475 DANP58=CIR=R2KWP58*TA33M
3476 DAN = DANP58
3477
3478 C P59
3479 ELSEIF (CND[I1,JJ,KK,IP1,JM1,KM1]) THEN
3480 PC22P59 = -(1.0/2.0*AJ1[J])
3481 PC52P59 = -(1.0/2.0*AJ1[J])*XIYIP[J,I])
3482 PC87P59 = -(1.0/2.0*AJ1[J])
3483 R2KWP59=(G1=G2*SG[I,J,KM1])*(PC52P59+PC7+PC22=PC87P59+PC22P59+PC67)+
3484 (G1=(PC52+PC7+PC22=PC87+PC37**2)+1)**(G2-1)/4.0
3485 DANP59=CIR=R2KWP59*TA33M
3486 DAN = DANP59
3487
3488 C P61
3489 ELSEIF (CND[I1,JJ,KK,IM2,J,KM1]) THEN
3490 PC9P61 = DXII[IM2]=S
3491 PC24P61 = (-AJ2[J]+AJ1[J])/2.0
3492 PC33P61 = -(1.0/2.0*A1K[K])
3493 PC39P61 = (-A2K[KM1]+A1K[KM1])/2.0
3494 PC54P61 = DXII[IM2]=A11R[J,IM2]=S+(-AJ2[J]+AJ1[J])*XIYIP[J,IM2]/
3495 2.0
3496 PC89P61 = DXII[IM2]=XIYIP[J,IM2]=S+(-AJ2[J]+AJ1[J])/2.0
3497 TO=G2-1
3498 T1=(G1=(PC18=PC83+PC3=PC48+PC33**2)+1)**TO
3499 T2=(G1=(PC54+PC9+PC24=PC89+PC39**2)+1)**TO
3500 T3=PC54+PC9P61+PC54P61=PC9+PC24=PC89P61+PC24P61=PC89+2*PC39=
3501 PC39P61
3502 R2KWP61=(G1=G2*SG[IM1,J,KM1]*T2=T3*S+2*G1=G2*SG[IM1,J,K]=PC33+
3503 PC33P61=T1*S+G1=G2*T2=T3+2*G1=G2*PC33+PC33P61*T1)/4.0
3504 DANP61=CIR=R2KWP61*TA33M
3505 DAN = DANP61
3506
3507 C P62
3508 ELSEIF (CND[I1,JJ,KK,IM1,J,KM1]) THEN
3509 PC8P62 = DXII[IM1]=S
3510 PC9P62 = DXII[IM2]
3511 PC23P62 = (-AJ2[J]+AJ1[J])/2.0
3512 PC24P62 = (-AJ2[J]+AJ1[J])/2.0
3513 PC32P62 = -(1.0/2.0*A1K[K])
3514 PC33P62 = -(1.0/2.0*A1K[K])
3515 PC38P62 = (-A2K[KM1]+A1K[KM1])/2.0
3516 PC39P62 = (-A2K[KM1]+A1K[KM1])/2.0
3517 PC53P62 = DXII[IM1]=A11R[J,IM1]=S+(-AJ2[J]+AJ1[J])*XIYIP[J,IM1]/
3518 2.0
3519 PC54P62 = (-AJ2[J]+AJ1[J])*XIYIP[J,IM2]/2.0+DXII[IM2]=A11R[J,IM2]
3520 PC68P62 = DXII[IM1]*XIYIP[J,IM1]=S+(-AJ2[J]+AJ1[J])/2.0
3521 PC89P62 = DXII[IM2]*XIYIP[J,IM2]+(-AJ2[J]+AJ1[J])/2.0
3522 TO=G2-1
3523 T1=(G1=(PC17=PC82+PC2=PC47+PC32**2)+1)**TO
3524 T2=2*G1=G2*PC32=PC32P62+T1
3525 T3=(G1=(PC18=PC83+PC3=PC48+PC33**2)+1)**TO
3526 T4=(G1=(PC83=PC8+PC23=PC68+PC38**2)+1)**TO
3527 T5=PC53+PC8P62+PC53P62=PC8+PC23=PC68P62+PC23P62=PC68+2*PC38=
3528 PC38P62
3529 T6=G1=G2*T4=T5
3530 T7=(G1=(PC54+PC9+PC24=PC89+PC39**2)+1)**TO
3531 T8=PC54+PC9P62+PC54P62=PC9+PC24=PC89P62+PC24P62=PC89+2*PC39=
3532 PC39P62
3533 R2KWP62=(SG[IM1,J,KM1])*(G1=G2*T7=T8*S+T6)+SG[IM1,J,K]=(2*G1=G2=
3534 PC33+PC33P62+T3*S+T2)+G1=G2*SG[I,J,KM1]*T4=T5*S+2*G1=G2*SG[I,J,K]
3535 +PC32=PC32P62+T1*S+G1=G2*T7=T8+T6+2*G1=G2=PC33+PC33P62+T3*T2)/4.0
3536 DANP62=CIR=R2KWP62*TA33M
3537 DAN = DANP62
3538
3539 C P63
3540 ELSEIF (CND[I1,JJ,KK,I,J,KM1]) THEN
3541 PC7P63 = DXII[I]=S
3542 PC8P63 = DXII[IM1]
3543 PC22P63 = (-AJ2[J]+AJ1[J])/2.0
3544 PC23P63 = (-AJ2[J]+AJ1[J])/2.0
3545 PC31P63 = -(1.0/2.0*A1K[K])
3546 PC32P63 = -(1.0/2.0*A1K[K])
3547 PC37P63 = (-A2K[KM1]+A1K[KM1])/2.0
3548 PC38P63 = (-A2K[KM1]+A1K[KM1])/2.0
3549 PC52P63 = DXII[I]=A11R[J,I]=S+(-AJ2[J]+AJ1[J])*XIYIP[J,I]/2.0
3550 PC53P63 = (-AJ2[J]+AJ1[J])*XIYIP[J,IM1]/2.0+DXII[IM1]=A11R[J,IM1]
3551 PC87P63 = DXII[I]*XIYIP[J,I]=S+(-AJ2[J]+AJ1[J])/2.0
3552 PC89P63 = DXII[IM1]*XIYIP[J,IM1]+(-AJ2[J]+AJ1[J])/2.0
3553 TO=G2-1
3554 T1=(G1=(PC17=PC82+PC2=PC47+PC32**2)+1)**TO
3555 T2=(G1=(PC53=PC8+PC23=PC68+PC38**2)+1)**TO
3556 T3=PC53+PC8P63+PC53P63=PC8+PC23=PC68P63+PC23P63=PC68+2*PC38=
3557 PC38P63
3558 R2KWP63=(SG[I,J,KM1])*(G1=G2*T2=T3*S+G1=G2*(G1=(PC52+PC7+PC22=PC67+
3559 PC37**2)+1)**TO*(PC52+PC7P63+PC52P63=PC7+PC22=PC87P63+PC22P63=
3560 PC67+2*PC37=PC37P63))+SG[I,J,K]=(2*G1=G2=PC32=PC32P63+T1*S+2*G1=
3561 G2+PC3=PC31P63+(G1=(PC18=PC83+PC3=PC48+PC33**2)+1)**TO)+G1=G2=SG
3562 ([IM1,J,KM1]*T2=T3+G1=G2*T2=T3+2*G1=G2*SG[IM1,J,K]=PC33+PC32P63+T1
3563 +2*G1=G2=PC31P63+T1)/4.0
3564 DANP63=CIR=R2KWP63*TA33M
3565 DAN = DANP63
3566
3567 C P64
3568 ELSEIF (CND[I1,JJ,KK,IP1,J,KM1]) THEN
3569 PC7P64 = DXII[I])

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3564. PC22P64 = (-AJ2(J)+AJ1(J))/2.0
3565. PC31P64 = -(1.0/2.0*A1K(K))
3566. PC37P64 = (-A2K(KM1)+A1K(KM1))/2.0
3567. PC52P64 = (-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0+DXII(I)*A11R(J,I)
3568. PC67P64 = DXII(I)*XIYIP(J,I)+(-AJ2(J)+AJ1(J))/2.0
3569. TO=G2-1
3570. R2KWP64=(G1+G2+SG(I,J,KM1))*(G1*(PC52+PC7+PC22+PC67+PC37==2)+1)==TO
3571. =[(PC52+PC7P64+PC52P64+PC7+PC22+PC67P64+PC22P64+PC67+2+PC37+
3572. PC37P64)+2+G1+G2+SG(I,J,K)+PC31+PC31P64]*(G1*(PC16+PC61+PC1+PC46+
3573. PC31==2)+1)==TO)/4.0
3574. DANP64=CIR=R2KWP64+TA33M
3575. DAN = DANP64
3576.
3577. C P65
3578. ELSEIF [CND(I,J,J,K,IM2,JP1,KM1)] THEN
3579. PC24P65 = AJ2(J)/2.0
3580. PC54P65 = AJ2(J)*XIYIP(J,IM2)/2.0
3581. PC69P65 = AJ2(J)/2.0
3582. TO=PC54P65+PC6+PC24+PC69P65+PC24P65+PC69
3583. T1=(G1*(PC54+PC6+PC24+PC69+PC39==2)+1)==(G2-1)
3584. R2KWP65=(G1+G2+SG(IM1,J,KM1))*TO=T1+S+G1+G2+TO=T1)/4.0
3585. DANP65=CIR=R2KWP65+TA33M
3586. DAN = DANP65
3587.
3588. C P67
3589. ELSEIF [CND(I,J,J,K,IM1,JP1,KM1)] THEN
3590. PC23P67 = AJ2(J)/2.0
3591. PC24P67 = AJ2(J)/2.0
3592. PC53P67 = AJ2(J)*XIYIP(J,IM1)/2.0
3593. PC54P67 = AJ2(J)*XIYIP(J,IM2)/2.0
3594. PC68P67 = AJ2(J)/2.0
3595. PC69P67 = AJ2(J)/2.0
3596. TO=PC53P67+PC6+PC23+PC68P67+PC23P67+PC68
3597. T1=G2-1
3598. T2=(G1*(PC53+PC6+PC23+PC68+PC38==2)+1)==T1
3599. T3=G1+G2+TO=T2
3600. T4=PC54P67+PC6+PC24+PC69P67+PC24P67+PC69
3601. T5=(G1*(PC54+PC6+PC24+PC69+PC39==2)+1)==T1
3602. R2KWP67=(SG(IM1,J,KM1))*(G1+G2+T4+T5+S+T3)+G1+G2+SG(I,J,KM1)*TO=T2+
3603. S+G1+G2+T4+T5+T3)/4.0
3604. DANP67=CIR=R2KWP67+TA33M
3605. DAN = DANP67
3606.
3607. C P68
3608. ELSEIF [CND(I,J,J,K,I,JP1,KM1)] THEN
3609. PC22P68 = AJ2(J)/2.0
3610. PC23P68 = AJ2(J)/2.0
3611. PC52P68 = AJ2(J)*XIYIP(J,I)/2.0
3612. PC53P68 = AJ2(J)*XIYIP(J,IM1)/2.0
3613. PC67P68 = AJ2(J)/2.0
3614. PC68P68 = AJ2(J)/2.0
3615. TO=PC52P68+PC6+PC22+PC67P68+PC22P68+PC67
3616. T1=G2-1
3617. T2=(G1*(PC52+PC6+PC22+PC67+PC37==2)+1)==T1
3618. R2KWP68=(SG(I,J,KM1))*(G1+G2+TO=T2+S+G1+G2+TO=T2)/4.0
3619. DANP68=CIR=R2KWP68+TA33M
3620. DAN = DANP68
3621.
3622. C P69
3623. ELSEIF [CND(I,J,J,K,IP1,JP1,KM1)] THEN
3624. PC22P69 = AJ2(J)/2.0
3625. PC52P69 = AJ2(J)*XIYIP(J,I)/2.0
3626. PC67P69 = AJ2(J)/2.0
3627. R2KWP69=(G1+G2+SG(I,J,KM1))*(PC52P69+PC7+PC22+PC67P69+PC22P69+PC67)*
3628. (G1*(PC52+PC7+PC22+PC67+PC37==2)+1)==(G2-1)/4.0
3629. DANP69=CIR=R2KWP69+TA33M
3630. DAN = DANP69
3631.
3632. C P81
3633. ELSEIF [CND(I,J,J,K,IM2,JP1,K)] THEN
3634. PC16P81 = -(1.0/2.0+AJ1(J))
3635. PC46P81 = -(1.0/2.0+AJ1(J))*XIYIP(J,IM2)
3636. PC63P81 = -(1.0/2.0+AJ1(J))
3637. TO=(G1*(PC16+PC63+PC3+PC46+PC33==2)+1)==(G2-1)
3638. T1=PC16+PC63P81+PC16P81+PC63+PC3+PC46P81
3639. R2KWP81=(G1+G2+SG(IM1,J,K))*TO=T1+S+G1+G2+TO=T1)/4.0
3640. DANP81=CIR=R2KWP81+TA33M
3641. DAN = DANP81
3642.
3643. C P82
3644. ELSEIF [CND(I,J,J,K,IM1,JP1,K)] THEN
3645. PC17P82 = -(1.0/2.0+AJ1(J))
3646. PC16P82 = -(1.0/2.0+AJ1(J))
3647. PC47P82 = -(1.0/2.0+AJ1(J))*XIYIP(J,IM1)
3648. PC46P82 = -(1.0/2.0+AJ1(J))*XIYIP(J,IM2)
3649. PC62P82 = -(1.0/2.0+AJ1(J))
3650. PC63P82 = -(1.0/2.0+AJ1(J))
3651. TO=G2-1
3652. T1=(G1*(PC17+PC62+PC2+PC47+PC32==2)+1)==TO
3653. T2=PC17+PC62P82+PC17P82+PC62+PC2+PC47P82
3654. T3=G1+G2+T1=T2
3655. T4=(G1*(PC16+PC63+PC3+PC46+PC33==2)+1)==TO
3656. T5=PC16+PC63P82+PC16P82+PC63+PC3+PC46P82
3657. R2KWP82=(SG(IM1,J,K))*(G1+G2+T4+T5+S+T3)+G1+G2+SG(I,J,K)*T1=T2+S+G1
3658. +G2+T4+T5+T3)/4.0
3659. DANP82=CIR=R2KWP82+TA33M
3660. DAN = DANP82
3661.
3662. C P83
3663. ELSEIF [CND(I,J,J,K,I,JP1,K)] THEN
3664. PC16P83 = -(1.0/2.0+AJ1(J))
3665. PC17P83 = -(1.0/2.0+AJ1(J))
3666. PC46P83 = -(1.0/2.0+AJ1(J))*XIYIP(J,I)
3667. PC47P83 = -(1.0/2.0+AJ1(J))*XIYIP(J,IM1)
3668. PC61P83 = -(1.0/2.0+AJ1(J))
3669. PC62P83 = -(1.0/2.0+AJ1(J))
3670. TO=G2-1
3671. T1=(G1*(PC17+PC62+PC2+PC47+PC32==2)+1)==TO
3672. T2=PC17+PC62P83+PC17P83+PC62+PC2+PC47P83
3673. R2KWP83=(SG(I,J,K))*(G1+G2+T1+T2+S+G1+G2*(G1*(PC16+PC61+PC1+PC46+
3674. PC31==2)+1)==TO*(PC16+PC61P83+PC16P83+PC61+PC1+PC46P83))+G1+G2+SG
3675. (IM1,J,K)*T1=T2+G1+G2+T1+T2)/4.0
3676. DANP83=CIR=R2KWP83+TA33M
3677. DAN = DANP83
3678.
3679. C P84
3680. ELSEIF [CND(I,J,J,K,IP1,JP1,K)] THEN
3681. PC16P84 = -(1.0/2.0+AJ1(J))
3682. PC46P84 = -(1.0/2.0+AJ1(J))*XIYIP(J,I)
3683. PC61P84 = -(1.0/2.0+AJ1(J))
3684. R2KWP84=(G1+G2+SG(I,J,K))*(G1*(PC16+PC61+PC1+PC46+PC31==2)+1)==(G2-1)
3685. +[(PC16+PC61P84+PC16P84+PC61+PC1+PC46P84)]/4.0
3686. DANP84=CIR=R2KWP84+TA33M
3687. DAN = DANP84
3688.
3689. C P85
3690. ELSEIF [CND(I,J,J,K,IM2,J,K)] THEN
3691. PC3P85 = DXII(IM2)*S
3692. PC16P85 = (-AJ2(J)+AJ1(J))/2.0
3693. PC33P85 = (-A2K(K)+A1K(K))/2.0
3694. PC39P85 = A2K(KM1)/2.0
3695. PC46P85 = DXII(IM2)*A11R(J,IM2)*S*(-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/
3696. 2.0
3697. PC63P85 = DXII(IM2)*XIYIP(J,IM2)*S*(-AJ2(J)+AJ1(J))/2.0
3698. TO=G2-1
3699. T1=(G1*(PC16+PC63+PC3+PC46+PC33==2)+1)==TO
3700. T2=PC16+PC63P85+PC16P85+PC63+PC3+PC46P85+PC3P85+PC46+2+PC33+
3701. PC33P85
3702. T3=(G1*(PC54+PC9+PC24+PC69+PC39==2)+1)==TO

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3686. R2KWP86=(2*G1+G2+SG[IM1,J,KM1])*PC39=PC39P86+T3+S+G1+G2+SG[IM1,J,K]
3687. *T1+T2+S+2*G1+G2+PC39=PC39P86+T3+G1+G2+T1+T2)/4.0
3688. DANP86=CIR=R2KWP86+TA33M
3689. DAN = DANP86
3700.
3701. C P87
3702. ELSEIF (CND[II,JJ,KK,IM1,J,K]) THEN
3703. PC2P87 = DXII[IM1]=S
3704. PC3P87 = DXII[IM2]
3705. PC17P87 = (-AJ2(J)+AJ1(J))/2.0
3706. PC18P87 = (-AJ2(J)+AJ1(J))/2.0
3707. PC32P87 = (-A2K(K)+A1K(K))/2.0
3708. PC33P87 = (-A2K(K)+A1K(K))/2.0
3709. PC38P87 = A2K(KM1)/2.0
3710. PC39P87 = A2K(KM1)/2.0
3711. PC47P87 = DXII[IM1]=A11R(J,IM1)=S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/
3712. 2.0
3713. PC48P87 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/2.0+DXII[IM2]=A11R(J,IM2)
3714. PC82P87 = DXII[IM1]=XIYIP(J,IM1)=S+(-AJ2(J)+AJ1(J))/2.0
3715. PC83P87 = DXII[IM2]=XIYIP(J,IM2)+(-AJ2(J)+AJ1(J))/2.0
3716. TO=G2-1
3717. T1=(G1*(PC17+PC82+PC2+PC47+PC32==2)+1)==TO
3718. T2=PC17+PC82P87+PC17P87+PC82+PC2+PC47P87+PC2P87+PC47+2*PC32+
3719. PC32P87
3720. T3=G1+G2+T1+T2
3721. T4=(G1*(PC18+PC83+PC3+PC48+PC33==2)+1)==TO
3722. T5=PC18+PC83P87+PC18P87+PC83+PC3+PC48P87+PC3P87+PC48+2*PC33+
3723. PC33P87
3724. T6=(G1*(PC53+PC8+PC23+PC88+PC38==2)+1)==TO
3725. T7=2*G1+G2+PC38+PC8+PC8P87+T6
3726. T8=(G1*(PC54+PC9+PC24+PC89+PC39==2)+1)==TO
3727. R2KWP87=(SG[IM1,J,KM1])*(2*G1+G2+PC39+PC39P87+T8+S+T7)+SG[IM1,J,K]=
3728. (G1+G2+T4+T5+S+T3)+2*G1+G2+SG[I,J,KM1]=PC38+PC38P87+T8+S+G1+G2+SG
3729. (I,J,K)=T1+T2+S+2*G1+G2+PC39+PC39P87+T8+T7+G1+G2+T4+T5+T3)/4.0
3730. DANP87=CIR=R2KWP87+TA33M
3731. DAN = DANP87
3732.
3733. C P88
3734. ELSEIF (CND[II,JJ,KK,I,J,K]) THEN
3735. PC1P88 = DXII[I]=S
3736. PC2P88 = DXII[IM1]
3737. PC16P88 = (-AJ2(J)+AJ1(J))/2.0
3738. PC17P88 = (-AJ2(J)+AJ1(J))/2.0
3739. PC31P88 = (-A2K(K)+A1K(K))/2.0
3740. PC32P88 = (-A2K(K)+A1K(K))/2.0
3741. PC37P88 = A2K(KM1)/2.0
3742. PC38P88 = A2K(KM1)/2.0
3743. PC48P88 = DXII[I]=A11R(J,I)=S+(-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0
3744. PC47P88 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/2.0+DXII[IM1]=A11R(J,IM1)
3745. PC81P88 = DXII[I]=XIYIP(J,I)=S+(-AJ2(J)+AJ1(J))/2.0
3746. PC82P88 = DXII[IM1]=XIYIP(J,IM1)+(-AJ2(J)+AJ1(J))/2.0
3747. TO=G2-1
3748. T1=(G1*(PC17+PC82+PC2+PC47+PC32==2)+1)==TO
3749. T2=PC17+PC82P88+PC17P88+PC82+PC2+PC47P88+PC2P88+PC47+2*PC32+
3750. PC32P88
3751. T3=(G1*(PC53+PC8+PC23+PC88+PC38==2)+1)==TO
3752. R2KWP88=(SG[I,J,KM1])*(2*G1+G2+PC38+PC8+PC8P88+T3+S+2*G1+G2+PC37+
3753. PC37P88+(G1*(PC52+PC7+PC22+PC67+PC37==2)+1)==TO)+SG[I,J,K]=(G1+G2
3754. *T1+T2+S+G1+G2=(G1*(PC16+PC81+PC1+PC46+PC31==2)+1)==TO+(PC16+
3755. PC81P88+PC18P88+PC81+PC1+PC46P88+PC1P88+PC46+2*PC31+PC31P88))+2*
3756. G1+G2+SG[IM1,J,KM1]=PC38+PC38P88+T3+2*G1+G2+PC38+PC38P88+T3+G1+G2
3757. *SG[IM1,J,K]=T1+T2+G1+G2+T1+T2)/4.0
3758. DANP88=CIR=R2KWP88+TA33M
3759. DAN = DANP88
3760.
3761. C P89
3762. ELSEIF (CND[II,JJ,KK,IP1,J,K]) THEN
3763. PC1P89 = DXII[I]=S
3764. PC16P89 = (-AJ2(J)+AJ1(J))/2.0
3765. PC31P89 = (-A2K(K)+A1K(K))/2.0
3766. PC37P89 = A2K(KM1)/2.0
3767. PC48P89 = (-AJ2(J)+AJ1(J))*XIYIP(J,I)/2.0+DXII[I]=A11R(J,I)
3768. PC81P89 = DXII[I]=XIYIP(J,I)+(-AJ2(J)+AJ1(J))/2.0
3769. TO=G2-1
3770. R2KWP89=(2*G1+G2+SG[I,J,KM1])*PC37+PC37P89=(G1*(PC52+PC7+PC22+PC87+
3771. PC37+2)+1)==TO+G1+G2+SG[I,J,K]=(G1*(PC16+PC81+PC1+PC46+PC31==2)+
3772. 1)==TO+(PC16+PC81P89+PC18P89+PC81+PC1+PC46P89+PC1P89+PC46+2*PC31+
3773. PC31P89))/4.0
3774. DANP89=CIR=R2KWP89+TA33M
3775. DAN = DANP89
3776.
3777. C P91
3778. ELSEIF (CND[II,JJ,KK,IM2,JP1,K]) THEN
3779. PC18P91 = AJ2(J)/2.0
3780. PC48P91 = AJ2(J)=XIYIP(J,IM2)/2.0
3781. PC83P91 = AJ2(J)/2.0
3782. TO=(G1*(PC18+PC83+PC3+PC48+PC33==2)+1)==(G2-1)
3783. T1=PC18+PC83P91+PC18P91+PC83+PC3+PC48P91
3784. R2KWP91=(G1+G2+SG[IM1,J,K])*(TO+T1+S+G1+G2+TO+T1)/4.0
3785. DANP91=CIR=R2KWP91+TA33M
3786. DAN = DANP91
3787.
3788. C P92
3789. ELSEIF (CND[II,JJ,KK,IM1,JP1,K]) THEN
3790. PC17P92 = AJ2(J)/2.0
3791. PC18P92 = AJ2(J)/2.0
3792. PC47P92 = AJ2(J)=XIYIP(J,IM1)/2.0
3793. PC48P92 = AJ2(J)=XIYIP(J,IM2)/2.0
3794. PC82P92 = AJ2(J)/2.0
3795. PC83P92 = AJ2(J)/2.0
3796. TO=G2-1
3797. T1=(G1*(PC17+PC82+PC2+PC47+PC32==2)+1)==TO
3798. T2=PC17+PC82P92+PC17P92+PC82+PC2+PC47P92
3799. T3=G1+G2+T1+T2
3800. T4=(G1*(PC18+PC83+PC3+PC48+PC33==2)+1)==TO
3801. T5=PC18+PC83P92+PC18P92+PC83+PC3+PC48P92
3802. R2KWP92=(SG[IM1,J,K])*(G1+G2+T4+T5+S+T3)+G1+G2+SG[I,J,K]=T1+T2+S+G1
3803. *G2+T4+T5+T3)/4.0
3804. DANP92=CIR=R2KWP92+TA33M
3805. DAN = DANP92
3806.
3807. C P93
3808. ELSEIF (CND[II,JJ,KK,I,JP1,K]) THEN
3809. PC16P93 = AJ2(J)/2.0
3810. PC17P93 = AJ2(J)/2.0
3811. PC46P93 = AJ2(J)=XIYIP(J,I)/2.0
3812. PC47P93 = AJ2(J)=XIYIP(J,IM1)/2.0
3813. PC81P93 = AJ2(J)/2.0
3814. PC82P93 = AJ2(J)/2.0
3815. TO=G2-1
3816. T1=(G1*(PC17+PC82+PC2+PC47+PC32==2)+1)==TO
3817. T2=PC17+PC82P93+PC17P93+PC82+PC2+PC47P93
3818. R2KWP93=(SG[I,J,K])*(G1+G2+T1+T2+S+G1+G2+(G1*(PC18+PC81+PC1+PC46+
3819. PC31==2)+1)==TO+(PC18+PC81P93+PC18P93+PC81+PC1+PC46P93))+G1+G2+SG
3820. (IM1,J,K)=T1+T2+G1+G2+T1+T2)/4.0
3821. DANP93=CIR=R2KWP93+TA33M
3822. DAN = DANP93
3823.
3824. C P94
3825. ELSEIF (CND[II,JJ,KK,IP1,JP1,K]) THEN
3826. PC16P94 = AJ2(J)/2.0
3827. PC46P94 = AJ2(J)=XIYIP(J,I)/2.0
3828. PC81P94 = AJ2(J)/2.0
3829. R2KWP94=(G1+G2+SG[I,J,K])*(G1*(PC18+PC81+PC1+PC46+PC31==2)+1)==(G2-1
3830. )*(PC18+PC81P94+PC18P94+PC81+PC1+PC46P94))/4.0
3831. DANP94=CIR=R2KWP94+TA33M
3832. DAN = DANP94
3833.
3834. C P111
3835. ELSEIF (CND[II,JJ,KK,IM2,J,KP1]) THEN

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ORIGINAL PAGE 13
OF FOUR QUALITY

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3828. PC33P111 = A2K(K)/2.0
3829. TO=(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**(G2-1)
3830. R2KWP111=(2*G1*G2+SG(IM1,J,K))*PC33*PC33P111+TO+S+2*G1*G2*PC33*
3831. PC33P111+TO/4.0
3832. DANP111=CIR+R2KWP111+TA33M
3833. DAN = DANP111
3834.
3835. C P112
3836. ELSEIF (CND(II,JJ,KK,IM1,J,KP1)) THEN
3837. PC32P112 = A2K(K)/2.0
3838. PC33P112 = A2K(K)/2.0
3839. TO=G2-1
3840. T1=(G1*(PC17+PC62+PC2+PC47+PC32**2)+1)**TO
3841. T2=2*G1*G2+PC32+PC32P112+T1
3842. T3=(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO
3843. R2KWP112=(SG(IM1,J,K)*(2*G1*G2+PC33*PC33P112+T3+S+T2)+2*G1*G2+SG(
3844. J,K))*PC32+PC32P112+T1+S+2*G1*G2+PC33*PC33P112+T3+T2/4.0
3845. DANP112=CIR+R2KWP112+TA33M
3846. DAN = DANP112
3847.
3848. C P113
3849. ELSEIF (CND(II,JJ,KK,I,J,KP1)) THEN
3850. PC31P113 = A2K(K)/2.0
3851. PC32P113 = A2K(K)/2.0
3852. TO=G2-1
3853. T1=(G1*(PC17+PC62+PC2+PC47+PC32**2)+1)**TO
3854. R2KWP113=(SG(I,J,K)*(2*G1*G2+PC32+PC32P113+T1+S+2*G1*G2+PC31*
3855. PC31P113+(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO)+2*G1*G2+SG(IM1,
3856. J,K))*PC32+PC32P113+T1+S+2*G1*G2+PC32+PC32P113+T1/4.0
3857. DANP113=CIR+R2KWP113+TA33M
3858. DAN = DANP113
3859.
3860. C P114
3861. ELSEIF (CND(II,JJ,KK,IP1,J,KP1)) THEN
3862. PC31P114 = A2K(K)/2.0
3863. R2KWP114=G1*G2+SG(I,J,K)*PC31*PC31P114+(G1*(PC18+PC63+PC3+PC48+
3864. PC31**2)+1)**(G2-1)/2.0
3865. DANP114=CIR+R2KWP114+TA33M
3866. DAN = DANP114
3867.
3868. C P182
3869. ELSEIF (CND(II,JJ,KK,ITE,J,KLOW-2)) THEN
3870. PC31P182 = -(CC6+A1K(K)+S)
3871. PC32P182 = -(CC6+A1K(K)+S)
3872. PC33P182 = -(CC6+A1K(K)+S)
3873. PC37P182 = -(CC6+A1K(KM1)+S)
3874. PC38P182 = -(CC6+A1K(KM1)+S)
3875. PC39P182 = -(CC6+A1K(KM1)+S)
3876. TO=G2-1
3877. T1=(G1*(PC17+PC62+PC2+PC47+PC32**2)+1)**TO
3878. T2=2*G1*G2+PC32+PC32P182+T1
3879. T3=(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO
3880. T4=(G1*(PC53+PC8+PC23+PC68+PC38**2)+1)**TO
3881. T5=2*G1*G2+PC38+PC38P182+T4
3882. T6=(G1*(PC54+PC9+PC24+PC69+PC39**2)+1)**TO
3883. R2KWP182=(SG(IM1,J,KM1)*(2*G1*G2+PC39+PC39P182+T6+S+T5)+SG(I,J,KM1
3884. ))*(2*G1*G2+PC38+PC38P182+T4+S+2*G1*G2+PC37+PC37P182+(G1*(PC52+PC7
3885. +PC22+PC67+PC37**2)+1)**TO)+SG(IM1,J,K)*(2*G1*G2+PC33+PC33P182+T3
3886. +S+T2)+SG(I,J,K)*(2*G1*G2+PC32+PC32P182+T1+S+2*G1*G2+PC31*
3887. PC31P182+(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO)+2*G1*G2+PC39*
3888. PC39P182+T6+T5+2*G1*G2+PC33+PC33P182+T3+T2/4.0
3889. CIRP182=CC6+S
3890. DANP182=CIR+R2KWP182+TA33M+CIRP182+R2KW+TA33M
3891. DAN = DANP182
3892.
3893. C P183
3894. ELSEIF (CND(II,JJ,KK,ITE,J,KLOW-1)) THEN
3895. PC31P183 = -(CC5+A1K(K))
3896. PC32P183 = -(CC5+A1K(K))
3897. PC33P183 = -(CC5+A1K(K))
3898. PC37P183 = -(CC5+A1K(KM1))
3899. PC38P183 = -(CC5+A1K(KM1))
3900. PC39P183 = -(CC5+A1K(KM1))
3901. TO=G2-1
3902. T1=(G1*(PC17+PC62+PC2+PC47+PC32**2)+1)**TO
3903. T2=2*G1*G2+PC32+PC32P183+T1
3904. T3=(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO
3905. T4=(G1*(PC53+PC8+PC23+PC68+PC38**2)+1)**TO
3906. T5=2*G1*G2+PC38+PC38P183+T4
3907. T6=(G1*(PC54+PC9+PC24+PC69+PC39**2)+1)**TO
3908. R2KWP183=(SG(IM1,J,KM1)*(2*G1*G2+PC39+PC39P183+T6+S+T5)+SG(I,J,KM1
3909. ))*(2*G1*G2+PC38+PC38P183+T4+S+2*G1*G2+PC37+PC37P183+(G1*(PC52+PC7
3910. +PC22+PC67+PC37**2)+1)**TO)+SG(IM1,J,K)*(2*G1*G2+PC33+PC33P183+T3
3911. +S+T2)+SG(I,J,K)*(2*G1*G2+PC32+PC32P183+T1+S+2*G1*G2+PC31*
3912. PC31P183+(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO)+2*G1*G2+PC39*
3913. PC39P183+T6+T5+2*G1*G2+PC33+PC33P183+T3+T2/4.0
3914. CIRP183=CC5
3915. DANP183=CIR+R2KWP183+TA33M+CIRP183+R2KW+TA33M
3916. DAN = DANP183
3917.
3918. C P184
3919. ELSEIF (CND(II,JJ,KK,ITE,J,KLOW)) THEN
3920. PC31P184 = -(CC4+A1K(K)+S)
3921. PC32P184 = -(CC4+A1K(K)+S)
3922. PC33P184 = -(CC4+A1K(K)+S)
3923. PC37P184 = -(CC4+A1K(KM1)+S)
3924. PC38P184 = -(CC4+A1K(KM1)+S)
3925. PC39P184 = -(CC4+A1K(KM1)+S)
3926. TO=G2-1
3927. T1=(G1*(PC17+PC62+PC2+PC47+PC32**2)+1)**TO
3928. T2=2*G1*G2+PC32+PC32P184+T1
3929. T3=(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO
3930. T4=(G1*(PC53+PC8+PC23+PC68+PC38**2)+1)**TO
3931. T5=2*G1*G2+PC38+PC38P184+T4
3932. T6=(G1*(PC54+PC9+PC24+PC69+PC39**2)+1)**TO
3933. R2KWP184=(SG(IM1,J,KM1)*(2*G1*G2+PC39+PC39P184+T6+S+T5)+SG(I,J,KM1
3934. ))*(2*G1*G2+PC38+PC38P184+T4+S+2*G1*G2+PC37+PC37P184+(G1*(PC52+PC7
3935. +PC22+PC67+PC37**2)+1)**TO)+SG(IM1,J,K)*(2*G1*G2+PC33+PC33P184+T3
3936. +S+T2)+SG(I,J,K)*(2*G1*G2+PC32+PC32P184+T1+S+2*G1*G2+PC31*
3937. PC31P184+(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO)+2*G1*G2+PC39*
3938. PC39P184+T6+T5+2*G1*G2+PC33+PC33P184+T3+T2/4.0
3939. CIRP184=CC4+S
3940. DANP184=CIR+R2KWP184+TA33M+CIRP184+R2KW+TA33M
3941. DAN = DANP184
3942.
3943. C P185
3944. ELSEIF (CND(II,JJ,KK,ITE,J,KUP)) THEN
3945. PC31P185 = -(CC1+A1K(K))
3946. PC32P185 = -(CC1+A1K(K))
3947. PC33P185 = -(CC1+A1K(K))
3948. PC37P185 = -(CC1+A1K(KM1))
3949. PC38P185 = -(CC1+A1K(KM1))
3950. PC39P185 = -(CC1+A1K(KM1))
3951. TO=G2-1
3952. T1=(G1*(PC17+PC62+PC2+PC47+PC32**2)+1)**TO
3953. T2=2*G1*G2+PC32+PC32P185+T1
3954. T3=(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO
3955. T4=(G1*(PC53+PC8+PC23+PC68+PC38**2)+1)**TO
3956. T5=2*G1*G2+PC38+PC38P185+T4
3957. T6=(G1*(PC54+PC9+PC24+PC69+PC39**2)+1)**TO
3958. R2KWP185=(SG(IM1,J,KM1)*(2*G1*G2+PC39+PC39P185+T6+S+T5)+SG(I,J,KM1
3959. ))*(2*G1*G2+PC38+PC38P185+T4+S+2*G1*G2+PC37+PC37P185+(G1*(PC52+PC7
3960. +PC22+PC67+PC37**2)+1)**TO)+SG(IM1,J,K)*(2*G1*G2+PC33+PC33P185+T3
3961. +S+T2)+SG(I,J,K)*(2*G1*G2+PC32+PC32P185+T1+S+2*G1*G2+PC31*
3962. PC31P185+(G1*(PC18+PC63+PC3+PC48+PC33**2)+1)**TO)+2*G1*G2+PC39*
3963. PC39P185+T6+T5+2*G1*G2+PC33+PC33P185+T3+T2/4.0
3964. CIRP185=CC1
3965. DANP185=CIR+R2KWP185+TA33M+CIRP185+R2KW+TA33M
3966. DAN = DANP185

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3960. C P186
3961. ELSEIF (CND[I,J,K,K,ITE,J,KUP+1]) THEN
3962. PC31P186 = -(CC2+A1K(K)+S)
3963. PC32P186 = -(CC2+A1K(K)+S)
3964. PC33P186 = -(CC2+A1K(K)+S)
3965. PC37P186 = -(CC2+A1K(KM1)+S)
3966. PC38P186 = -(CC2+A1K(KM1)+S)
3967. PC39P186 = -(CC2+A1K(KM1)+S)
3968. T0=G2-1
3969. T1=(G1=(PC17+PC62+PC2+PC47+PC32==2)+1)==TO
3970. T2=2+G1+G2+PC32+PC32P186+T1
3971. T3=(G1=(PC18+PC63+PC3+PC48+PC33==2)+1)==TO
3972. T4=(G1=(PC53+PC8+PC23+PC68+PC38==2)+1)==TO
3973. T5=2+G1+G2+PC38+PC38P186+T4
3974. T6=(G1=(PC54+PC9+PC24+PC69+PC39==2)+1)==TO
3975. R2KWP186=(SG(IM1,J,KM1)=(2+G1+G2+PC39+PC39P186+T6+S+T5)+SG(I,J,KM1
3976. )=(2+G1+G2+PC38+PC38P186+T4+S+2+G1+G2+PC37+PC37P186+(G1=(PC52+PC7
3977. +PC22+PC67+PC37==2)+1)==TO)+SG(IM1,J,K)=(2+G1+G2+PC33+PC33P186+T3
3978. +S+T2)+SG(I,J,K)=(2+G1+G2+PC32+PC32P186+T1+S+2+G1+G2+PC31+
3979. +S+T2)+SG(I,J,K)=(2+G1+G2+PC31+PC1+PC48+PC31==2)+1)==TO)+2+G1+G2+PC39+
3980. PC39P186+T6+T5+2+G1+G2+PC33+PC33P186+T3+T2)/4.0
3981. CIRP186=CC2+S
3982. DANP186=CIR+R2KWP186+TA33M+CIRP186+R2KW+TA33M
3983. DAN = DANP186
3984.
3985. C P187
3986. ELSEIF (CND[I,J,K,K,ITE,J,KUP+2]) THEN
3987. PC31P187 = -(CC3+A1K(K))
3988. PC32P187 = -(CC3+A1K(K))
3989. PC33P187 = -(CC3+A1K(K))
3990. PC37P187 = -(CC3+A1K(KM1))
3991. PC38P187 = -(CC3+A1K(KM1))
3992. PC39P187 = -(CC3+A1K(KM1))
3993. T0=G2-1
3994. T1=(G1=(PC17+PC62+PC2+PC47+PC32==2)+1)==TO
3995. T2=2+G1+G2+PC32+PC32P187+T1
3996. T3=(G1=(PC18+PC63+PC3+PC48+PC33==2)+1)==TO
3997. T4=(G1=(PC53+PC8+PC23+PC68+PC38==2)+1)==TO
3998. T5=2+G1+G2+PC38+PC38P187+T4
3999. T6=(G1=(PC54+PC9+PC24+PC69+PC39==2)+1)==TO
4000. R2KWP187=(SG(IM1,J,KM1)=(2+G1+G2+PC39+PC39P187+T6+S+T5)+SG(I,J,KM1
4001. )=(2+G1+G2+PC38+PC38P187+T4+S+2+G1+G2+PC37+PC37P187+(G1=(PC52+PC7
4002. +PC22+PC67+PC37==2)+1)==TO)+SG(IM1,J,K)=(2+G1+G2+PC33+PC33P187+T3
4003. +S+T2)+SG(I,J,K)=(2+G1+G2+PC32+PC32P187+T1+S+2+G1+G2+PC31+
4004. +S+T2)+SG(I,J,K)=(2+G1+G2+PC31+PC1+PC48+PC31==2)+1)==TO)+2+G1+G2+PC39+
4005. PC39P187+T6+T5+2+G1+G2+PC33+PC33P187+T3+T2)/4.0
4006. CIRP187=CC3
4007. DANP187=CIR+R2KWP187+TA33M+CIRP187+R2KW+TA33M
4008. DAN = DANP187
4009. ENDP
4010.
4011. C
4012. RETURN
4013. END
4014. SUBROUTINE R4(J,I,K,JJ,II,KK,DAN)
4015. RMDER4.FOR
4016.
4017. C
4018. INCLUDE (INTRO)
4019.
4020. C
4021. P
4022.
4023. P81 = P(J,KM1,IM2)
4024. P82 = P(J,KM1,IM1)
4025. P83 = P(J,KM1,I)
4026. P84 = P(J,KM1,IP1)
4027. P81 = P(JM1,K,IM2)
4028. P82 = P(JM1,K,IM1)
4029. P83 = P(JM1,K,I)
4030. P84 = P(JM1,K,IP1)
4031. P81 = P(J,K,IM2)
4032. P82 = P(J,K,IM1)
4033. P83 = P(J,K,I)
4034. P84 = P(J,K,IP1)
4035. P106 = P(JM1,KP1,IM2)
4036. P107 = P(JM1,KP1,IM1)
4037. P108 = P(JM1,KP1,I)
4038. P109 = P(JM1,KP1,IP1)
4039. P111 = P(J,KP1,IM2)
4040. P112 = P(J,KP1,IM1)
4041. P113 = P(J,KP1,I)
4042. P114 = P(J,KP1,IP1)
4043. P116 = P(JP1,KP1,IM2)
4044. P117 = P(JP1,KP1,IM1)
4045. P118 = P(JP1,KP1,I)
4046. P119 = P(JP1,KP1,IP1)
4047. P136 = P(J,KP2,IM2)
4048. P137 = P(J,KP2,IM1)
4049. P138 = P(J,KP2,I)
4050. P139 = P(J,KP2,IP1)
4051. P182 = P(J,KLOW-2,ITE)
4052. P183 = P(J,KLOW-1,ITE)
4053. P184 = P(J,KLOW,ITE)
4054. P185 = P(J,KUP,ITE)
4055. P186 = P(J,KUP+1,ITE)
4056. P187 = P(J,KUP+2,ITE)
4057.
4058. C
4059. PD
4060.
4061. PD1 = DXI(I)=(P88+S+P89)+OXINF/XIXIP(J,I)
4062. PD2 = DXI(IM1)=(P87+S+P88)+OXINF/XIXIP(J,IM1)
4063. PD3 = DXI(IM2)=(P88+S+P87)+OXINF/XIXIP(J,IM2)
4064. PD12 = DXI(I)=(P113+S+P114)+OXINF/XIXIP(J,I)
4065. PD14 = DXI(IM1)=(P112+S+P113)+OXINF/XIXIP(J,IM1)
4066. PD15 = DXI(IM2)=(P111+S+P112)+OXINF/XIXIP(J,IM2)
4067. PD16 = XIXIP(J,I)+OXINF*S/XIXIP(J,I)+(AJ2(J)=(P84+P93-P89-P86)+AJ1
4068. (J)=(P89+P88-P84-P83))/2.0
4069. PD17 = XIXIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P93+P92-P88-P87)
4070. +AJ1(J)=(P88+P87-P83-P82))/2.0
4071. PD18 = XIXIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P92+P91-P87-P86)
4072. +AJ1(J)=(P87+P86-P82-P81))/2.0
4073. PD24 = XIXIP(J,I)+OXINF*S/XIXIP(J,I)+(AJ2(J)=(P118+P118-P114-P113)
4074. +AJ1(J)=(P114+P113-P109-P108))/2.0
4075. PD29 = XIXIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P118+P117-P113-
4076. P112)+AJ1(J)=(P113+P112-P108-P107))/2.0
4077. PD30 = XIXIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P117+P118-P112-
4078. P111)+AJ1(J)=(P112+P111-P107-P106))/2.0
4079. PD31 = -(A2K(K)=(CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+
4080. P185+CC5+P183))+OXINF*[A1K(K)=(P89+P88-P84-P83)+A2K(K)=(P89+P88+
4081. P114+P113))/2.0
4082. PD32 = -(A2K(K)=(CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+
4083. P185+CC5+P183))+OXINF*[A1K(K)=(P88+P87-P83-P82)+A2K(K)=(P88+P87+
4084. P113+P112))/2.0
4085. PD33 = -(A2K(K)=(CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+
4086. P185+CC5+P183))+OXINF*[A1K(K)=(P87+P86-P82-P81)+A2K(K)=(P87+P86+
4087. P112+P111))/2.0
4088. PD43 = -(A2K(KP1)=(CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+
4089. P185+CC5+P183))+OXINF*[A1K(KP1)=(P88+P88-P114+P113)+A2K(KP1)=(
4090. P139+P138-P114-P113))/2.0
4091. PD44 = -(A2K(KP1)=(CC2+P186+S+CC4+P184+S+CC6+P182+S+CC3+P187+CC1+
4092. P185+CC5+P183))+OXINF*[A1K(KP1)=(P88+P87+P113+P112)+A2K(KP1)=(

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4092. P138+P137-P113-P112))/2.0
4093. PD45 = -(A2K(KP1))=(CC2+P188+S+CC4+P184+S+CC8+P182+S+CC3+P187+CC1+
4094. P185+CC5+P183))+OXINF*(A1K(KP1))=-(P87+P86+P112+P111)+A2K(KP1))=
4095. P137+P136-P112-P111))/2.0
4096. PD48 = A11R(J,I)=(DXII(I))=(P88+S+P83)-OXINF/XIXIP(J,I))+XIVIP(J,I)
4097. =(XIVIP(J,I)+OXINF*S/XIXIP(J,I))+AJ2(J)=(P84+P83-P89-P88)+AJ1(J)=
4098. (P89+P88-P84-P83))/2.0
4099. PD47 = A11R(J,IM1)=(DXII(IM1))=(P87+S+P86)+OXINF/XIXIP(J,IM1))+
4100. XIVIP(J,IM1)=(XIVIP(J,IM1)+OXINF*S/XIXIP(J,IM1))+AJ2(J)=(P83+P82-
4101. P88-P87)+AJ1(J)=(P88+P87-P83-P82))/2.0
4102. PD48 = A11R(J,IM2)=(DXII(IM2))=(P88+S+P87)+OXINF/XIXIP(J,IM2))+
4103. XIVIP(J,IM2)=(XIVIP(J,IM2)+OXINF*S/XIXIP(J,IM2))+AJ2(J)=(P82+P81-
4104. P87-P88)+AJ1(J)=(P87+P86-P82-P81))/2.0
4105. PD58 = A11R(J,I)=(DXII(I))=(P113+S+P114)+OXINF/XIXIP(J,I))+XIVIP(J,
4106. I)=(XIVIP(J,I)+OXINF*S/XIXIP(J,I))+AJ2(J)=(P119+P118-P114-P113)+
4107. AJ1(J)=(P114+P113-P109-P108))/2.0
4108. PD58 = A11R(J,IM1)=(DXII(IM1))=(P112+S+P113)+OXINF/XIXIP(J,IM1))+
4109. XIVIP(J,IM1)=(XIVIP(J,IM1)+OXINF*S/XIXIP(J,IM1))+AJ2(J)=(P118+
4110. P117-P113-P112)+AJ1(J)=(P113+P112-P108-P107))/2.0
4111. PD60 = A11R(J,IM2)=(DXII(IM2))=(P111+S+P112)+OXINF/XIXIP(J,IM2))+
4112. XIVIP(J,IM2)=(XIVIP(J,IM2)+OXINF*S/XIXIP(J,IM2))+AJ2(J)=(P117+
4113. P116-P112-P111)+AJ1(J)=(P112+P111-P107-P106))/2.0
4114. PD61 = XIVIP(J,I)=(DXII(I))=(P88+S+P89)+OXINF/XIXIP(J,I))+XIVIP(J,I)
4115. =(OXINF*S/XIXIP(J,I))+AJ2(J)=(P84+P83-P89-P88)+AJ1(J)=(P89+P88-
4116. P84-P83))/2.0
4117. PD62 = XIVIP(J,IM1)=(DXII(IM1))=(P87+S+P86)+OXINF/XIXIP(J,IM1))+
4118. XIVIP(J,IM1)=(XIVIP(J,IM1)+OXINF*S/XIXIP(J,IM1))+AJ2(J)=(P83+P82-P88-P87)+AJ1(J)
4119. =(P88+P87-P83-P82))/2.0
4120. PD63 = XIVIP(J,IM2)=(DXII(IM2))=(P88+S+P87)+OXINF/XIXIP(J,IM2))+
4121. XIVIP(J,IM2)=(XIVIP(J,IM2)+OXINF*S/XIXIP(J,IM2))+AJ2(J)=(P82+P81-P87-P86)+AJ1(J)
4122. =(P87+P86-P82-P81))/2.0
4123. PD73 = XIVIP(J,I)=(DXII(I))=(P113+S+P114)+OXINF/XIXIP(J,I))+XIVIP(J,
4124. I)=(XIVIP(J,I)+OXINF*S/XIXIP(J,I))+AJ2(J)=(P119+P118-P114-P113)+AJ1(J)=(P114
4125. +P113-P109-P108))/2.0
4126. PD74 = XIVIP(J,IM1)=(DXII(IM1))=(P112+S+P113)+OXINF/XIXIP(J,IM1))+
4127. XIVIP(J,IM1)=(XIVIP(J,IM1)+OXINF*S/XIXIP(J,IM1))+AJ2(J)=(P118+P117-P113-P112)+
4128. AJ1(J)=(P113+P112-P108-P107))/2.0
4129. PD75 = XIVIP(J,IM2)=(DXII(IM2))=(P111+S+P112)+OXINF/XIXIP(J,IM2))+
4130. XIVIP(J,IM2)=(XIVIP(J,IM2)+OXINF*S/XIXIP(J,IM2))+AJ2(J)=(P117+P116-P112-P111)+
4131. AJ1(J)=(P112+P111-P107-P106))/2.0
4132. C
4133. C R2KP,CIR
4134. C
4135. TO=(G1=(PD17+PD62+PD2=PD47+PD32==2)+1)==G2
4136. T1=(G1=(PD18+PD63+PD3=PD48+PD33==2)+1)==G2
4137. T2=(G1=(PD28+PD74+PD14=PD89+PD44==2)+1)==G2
4138. T3=(G1=(PD30+PD75+PD15=PD60+PD45==2)+1)==G2
4139. R2KP=(SG(IM1,J,KP1))=(T3+S+T2)+SG(I,J,KP1)=(T2+S+(PD28+PD73+
4140. PD13+PD68+PD43==2)+1)==G2)+SG(IM1,J,K)=(T1+S+T0)+SG(I,J,K)=(T0+S+
4141. (G1=(PD18+PD61+PD1=PD46+PD31==2)+1)==G2)+T3+T2+T1+T0)/4.0
4142. CIR=CIRCIJ)
4143. C
4144. C DER4
4145. C P61
4146. IF (CND[II,JJ,KK,IM2,J,KM1]) THEN
4147. PD33P61 = -(1.0/2.0*A1K(K))
4148. TO=(G1=(PD18+PD63+PD3=PD48+PD33==2)+1)==(G2-1)
4149. R2KPP61=(2+G1=G2=SG(IM1,J,K)=PD33+PD33P61=TO+S+2+G1=G2=PD33+
4150. PD33P61=TO)/4.0
4151. DANP61=CIR=R2KPP61=S+TA33P
4152. DAN = DANP61
4153. C P62
4154. ELSEIF (CND[II,JJ,KK,IM1,J,KM1]) THEN
4155. PD32P62 = -(1.0/2.0*A1K(K))
4156. PD33P62 = -(1.0/2.0*A1K(K))
4157. TO=G2-1
4158. T1=(G1=(PD17+PD62+PD2=PD47+PD32==2)+1)==TO
4159. T2=2+G1=G2=PD32=PD32P62+T1
4160. T3=(G1=(PD18+PD63+PD3=PD48+PD33==2)+1)==TO
4161. R2KPP62=(SG(IM1,J,K)=(2+G1=G2=PD33=PD33P62+T3+S+T2)+2+G1=G2=SG(I,J
4162. ,K)=PD32+PD32P62+T1+S+2+G1=G2=PD33+PD33P62+T3+T2)/4.0
4163. DANP62=CIR=R2KPP62=S+TA33P
4164. DAN = DANP62
4165. C P63
4166. ELSEIF (CND[II,JJ,KK,I,J,KM1]) THEN
4167. PD31P63 = -(1.0/2.0*A1K(K))
4168. PD32P63 = -(1.0/2.0*A1K(K))
4169. TO=G2-1
4170. T1=(G1=(PD17+PD62+PD2=PD47+PD32==2)+1)==TO
4171. R2KPP63=(SG(I,J,K)=(2+G1=G2=PD32=PD32P63+T1+S+2+G1=G2=PD31=PD31P63
4172. =(G1=(PD18+PD61+PD1=PD46+PD31==2)+1)==TO)+2+G1=G2=SG(IM1,J,K)=
4173. PD32+PD32P63+T1+2+G1=G2=PD32+PD32P63+T1)/4.0
4174. DANP63=CIR=R2KPP63=S+TA33P
4175. DAN = DANP63
4176. C P64
4177. ELSEIF (CND[II,JJ,KK,IP1,J,KM1]) THEN
4178. PD31P64 = -(1.0/2.0*A1K(K))
4179. R2KPP64=G1+G2=SG(I,J,K)=PD31+PD31P64=(G1=(PD18+PD61+PD1=PD46+PD31
4180. ==2)+1)==(G2-1))/2.0
4181. DANP64=CIR=R2KPP64=S+TA33P
4182. DAN = DANP64
4183. C P61
4184. ELSEIF (CND[II,JJ,KK,IM2,JM1,K]) THEN
4185. PD18P61 = -(1.0/2.0*AJ1(J))
4186. PD48P61 = -(1.0/2.0*AJ1(J)=XIVIP(J,IM2))
4187. PD63P61 = -(1.0/2.0*AJ1(J))
4188. TO=(G1=(PD18+PD63+PD3=PD48+PD33==2)+1)==(G2-1)
4189. T1=PD18+PD63P61+PD18P61=PD63+PD3=PD48P61
4190. R2KPP61=(G1=G2=SG(IM1,J,K)=TO+T1+S+G1=G2=TO=TO)/4.0
4191. DANP61=CIR=R2KPP61=S+TA33P
4192. DAN = DANP61
4193. C P62
4194. ELSEIF (CND[II,JJ,KK,IM1,JM1,K]) THEN
4195. PD17P62 = -(1.0/2.0*AJ1(J))
4196. PD18P62 = -(1.0/2.0*AJ1(J))
4197. PD47P62 = -(1.0/2.0*AJ1(J)=XIVIP(J,IM1))
4198. PD48P62 = -(1.0/2.0*AJ1(J)=XIVIP(J,IM2))
4199. PD62P62 = -(1.0/2.0*AJ1(J))
4200. PD63P62 = -(1.0/2.0*AJ1(J))
4201. TO=G2-1
4202. T1=(G1=(PD17+PD62+PD2=PD47+PD32==2)+1)==TO
4203. T2=PD17+PD62P62+PD17P62=PD62+PD2=PD47P62
4204. T3=G1=G2=TO=T2
4205. T4=(G1=(PD18+PD63+PD3=PD48+PD33==2)+1)==TO
4206. T5=PD18+PD63P62+PD18P62=PD63+PD3=PD48P62
4207. R2KPP62=(SG(IM1,J,K)=(G1=G2=T4+T5+S+T3)+G1=G2=SG(I,J,K)=T1+T2+S+G1
4208. =G2+T4+T5+T3)/4.0
4209. DANP62=CIR=R2KPP62=S+TA33P
4210. DAN = DANP62
4211. C P63
4212. ELSEIF (CND[II,JJ,KK,I,JM1,K]) THEN
4213. PD16P63 = -(1.0/2.0*AJ1(J))
4214. PD17P63 = -(1.0/2.0*AJ1(J))
4215. PD46P63 = -(1.0/2.0*AJ1(J)=XIVIP(J,I))
4216. PD47P63 = -(1.0/2.0*AJ1(J)=XIVIP(J,IM1))
4217. PD61P63 = -(1.0/2.0*AJ1(J))
4218. PD62P63 = -(1.0/2.0*AJ1(J))
4219. TO=G2-1
4220. T1=(G1=(PD17+PD62+PD2=PD47+PD32==2)+1)==TO
4221. T2=PD17+PD62P63+PD17P63=PD62+PD2=PD47P63
4222. R2KPP63=(SG(I,J,K)=(G1=G2=T1+T2+S+G1=G2=(G1=(PD16+PD61+PD1=PD46+
4223. PD31==2)+1)==TO=(PD16+PD61P63+PD16P63=PD61+PD1=PD46P63))+G1=G2=SG

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4224.      (IM1,J,K)=T1+T2+G1+G2+T1+T2)/4.0
4225.      DANKP83=CIR=R2KPP83+S*TA33P
4226.      DAN = DANKP83
4227.
4228.      C P84
4229.      ELSEIF (CND(I1,JJ,KK,IP1,IM1,K)) THEN
4230.      PD18P84 = -(1.0/2.0*AJ1(J))
4231.      PD48P84 = -(1.0/2.0*AJ1(J)+XIVIP(J,I))
4232.      PD11P84 = -(1.0/2.0*AJ1(J))
4233.      R2KPP84=G1+G2+SG(I,J,K)=(G1+(PD18+PD61+PD1=PD48+PD31==2)+1)*G2-1
4234.      )*(PD18+PD61P84+PD18P84+PD61+PD1=PD48P84)/4.0
4235.      DANKP84=CIR=R2KPP84+S*TA33P
4236.      DAN = DANKP84
4237.
4238.      C P85
4239.      ELSEIF (CND(I1,JJ,KK,IM2,J,K)) THEN
4240.      PD3P85 = DXI1(IM2)*S
4241.      PD18P85 = (-AJ2(J)+AJ1(J))/2.0
4242.      PD33P85 = (-A2K(K)+A1K(K))/2.0
4243.      PD45P85 = -(1.0/2.0*A1K(KP1))
4244.      PD48P85 = DXI1(IM2)=A11R(J,IM2)*S+(-AJ2(J)+AJ1(J))*XIVIP(J,IM2)/
4245.      2.0
4246.      PD63P85 = DXI1(IM2)*XIVIP(J,IM2)*S+(-AJ2(J)+AJ1(J))/2.0
4247.      TO=G2-1
4248.      T1=(G1=(PD18+PD63+PD3+PD48+PD33==2)+1)==TO
4249.      T2=PD18+PD63P85+PD18P85+PD63+PD3+PD48P85+PD3P85+PD48+2=PD33+
4250.      PD33P85
4251.      T3=(G1=(PD30+PD75+PD15+PD80+PD45==2)+1)==TO
4252.      R2KPP86=(2+G1+G2=SG(IM1,J,KP1)=PD45+PD45P85+T3+S+G1+G2=SG(IM1,J,K)
4253.      )*(T1+T2+S+2+G1+G2+PD45+PD45P85+T3+G1+G2+T1+T2)/4.0
4254.      DANKP86=CIR=R2KPP86+S*TA33P
4255.      DAN = DANKP86
4256.
4257.      C P87
4258.      ELSEIF (CND(I1,JJ,KK,IM1,J,K)) THEN
4259.      PD2P87 = DXI1(IM1)*S
4260.      PD3P87 = DXI1(IM2)
4261.      PD17P87 = (-AJ2(J)+AJ1(J))/2.0
4262.      PD18P87 = (-AJ2(J)+AJ1(J))/2.0
4263.      PD32P87 = (-A2K(K)+A1K(K))/2.0
4264.      PD33P87 = (-A2K(K)+A1K(K))/2.0
4265.      PD44P87 = -(1.0/2.0*A1K(KP1))
4266.      PD45P87 = -(1.0/2.0*A1K(KP1))
4267.      PD47P87 = DXI1(IM1)=A11R(J,IM1)*S+(-AJ2(J)+AJ1(J))*XIVIP(J,IM1)/
4268.      2.0
4269.      PD48P87 = (-AJ2(J)+AJ1(J))*XIVIP(J,IM2)/2.0+DXI1(IM2)=A11R(J,IM2)
4270.      PD62P87 = DXI1(IM1)=XIVIP(J,IM1)*S+(-AJ2(J)+AJ1(J))/2.0
4271.      PD63P87 = DXI1(IM2)=XIVIP(J,IM2)+(-AJ2(J)+AJ1(J))/2.0
4272.      TO=G2-1
4273.      T1=(G1=(PD17+PD62+PD2+PD47+PD32==2)+1)==TO
4274.      T2=PD17+PD62P87+PD17P87+PD62+PD2+PD47P87+PD2P87+PD47+2=PD32+
4275.      PD32P87
4276.      T3=G1+G2+T1+T2
4277.      T4=(G1=(PD18+PD63+PD3+PD48+PD33==2)+1)==TO
4278.      T5=PD18+PD63P87+PD18P87+PD63+PD3+PD48P87+PD3P87+PD48+2=PD33+
4279.      PD33P87
4280.      T6=(G1=(PD28+PD74+PD14+PD58+PD44==2)+1)==TO
4281.      T7=2+G1+G2+PD44+PD44P87+T6
4282.      T8=(G1=(PD30+PD75+PD15+PD80+PD45==2)+1)==TO
4283.      R2KPP87=(SG(IM1,J,KP1)=(2+G1+G2+PD45+PD45P87+T8+S+T7)+SG(IM1,J,K)=
4284.      (G1+G2+T4+T5+S+T3)+2+G1+G2+SG(I,J,KP1)=PD44+PD44P87+T8+S+G1+G2=SG
4285.      (I,J,K)=T1+T2+S+2+G1+G2+PD45+PD45P87+T8+T7+G1+G2+T4+T5+T3)/4.0
4286.      DANKP87=CIR=R2KPP87+S*TA33P
4287.      DAN = DANKP87
4288.
4289.      C P88
4290.      ELSEIF (CND(I1,JJ,KK,I,J,K)) THEN
4291.      PD1P88 = DXI1(I)*S
4292.      PD2P88 = DXI1(IM1)
4293.      PD18P88 = (-AJ2(J)+AJ1(J))/2.0
4294.      PD17P88 = (-AJ2(J)+AJ1(J))/2.0
4295.      PD31P88 = (-A2K(K)+A1K(K))/2.0
4296.      PD32P88 = (-A2K(K)+A1K(K))/2.0
4297.      PD43P88 = -(1.0/2.0*A1K(KP1))
4298.      PD44P88 = -(1.0/2.0*A1K(KP1))
4299.      PD46P88 = DXI1(I)=A11R(J,I)*S+(-AJ2(J)+AJ1(J))*XIVIP(J,I)/2.0
4300.      PD47P88 = (-AJ2(J)+AJ1(J))*XIVIP(J,IM1)/2.0+DXI1(IM1)=A11R(J,IM1)
4301.      PD81P88 = DXI1(I)=XIVIP(J,I)*S+(-AJ2(J)+AJ1(J))/2.0
4302.      PD82P88 = DXI1(IM1)=XIVIP(J,IM1)+(-AJ2(J)+AJ1(J))/2.0
4303.      TO=G2-1
4304.      T1=(G1=(PD17+PD62+PD2+PD47+PD32==2)+1)==TO
4305.      T2=PD17+PD62P88+PD17P88+PD62+PD2+PD47P88+PD2P88+PD47+2=PD32+
4306.      PD32P88
4307.      T3=(G1=(PD28+PD74+PD14+PD58+PD44==2)+1)==TO
4308.      R2KPP88=(SG(I,J,KP1)=(2+G1+G2+PD44+PD44P88+T3+S+2+G1+G2+PD43+
4309.      PD43P88+G1=(PD28+PD73+PD13+PD58+PD43==2)+1)==TO)+SG(I,J,K)=(G1+
4310.      G2+T1+T2+S+G1+G2+G1=(PD18+PD61+PD1=PD48+PD31==2)+1)==TO+(PD18+
4311.      PD61P88+PD18P88+PD61+PD1=PD48P88+PD1P88+PD48+2=PD31+PD31P88)+2+
4312.      G1+G2=SG(IM1,J,KP1)=PD44+PD44P88+T3+2+G1+G2+PD44+PD44P88+T3+G1+G2
4313.      )*(SG(IM1,J,K)=T1+T2+G1+G2+T1+T2)/4.0
4314.      DANKP88=CIR=R2KPP88+S*TA33P
4315.      DAN = DANKP88
4316.
4317.      C P89
4318.      ELSEIF (CND(I1,JJ,KK,IP1,J,K)) THEN
4319.      PD1P89 = DXI1(I)
4320.      PD16P89 = (-AJ2(J)+AJ1(J))/2.0
4321.      PD31P89 = (-A2K(K)+A1K(K))/2.0
4322.      PD43P89 = -(1.0/2.0*A1K(KP1))
4323.      PD46P89 = (-AJ2(J)+AJ1(J))*XIVIP(J,I)/2.0+DXI1(I)=A11R(J,I)
4324.      PD81P89 = DXI1(I)=XIVIP(J,I)+(-AJ2(J)+AJ1(J))/2.0
4325.      TO=G2-1
4326.      R2KPP89=(2+G1+G2=SG(I,J,KP1)=PD43+PD43P89+G1=(PD28+PD73+PD13+PD58
4327.      +PD43==2)+1)==TO+G1+G2=SG(I,J,K)=(G1=(PD18+PD61+PD1=PD48+PD31==2)
4328.      +1)==TO+(PD18+PD61P89+PD18P89+PD61+PD1=PD48P89+PD1P89+PD48+2=PD31
4329.      +PD31P89))/4.0
4330.      DANKP89=CIR=R2KPP89+S*TA33P
4331.      DAN = DANKP89
4332.
4333.      C P91
4334.      ELSEIF (CND(I1,JJ,KK,IM2,JP1,K)) THEN
4335.      PD18P91 = AJ2(J)/2.0
4336.      PD48P91 = AJ2(J)*XIVIP(J,IM2)/2.0
4337.      PD83P91 = AJ2(J)/2.0
4338.      TO=(G1=(PD18+PD83+PD3+PD48+PD33==2)+1)==(G2-1)
4339.      T1=(PD18+PD83P91+PD18P91+PD83+PD3+PD48P91
4340.      R2KPP91=(G1+G2=SG(IM1,J,K)=TO+T1+S+G1+G2+TO+T1)/4.0
4341.      DANKP91=CIR=R2KPP91+S*TA33P
4342.      DAN = DANKP91
4343.
4344.      C P92
4345.      ELSEIF (CND(I1,JJ,KK,IM1,JP1,K)) THEN
4346.      PD17P92 = AJ2(J)/2.0
4347.      PD18P92 = AJ2(J)/2.0
4348.      PD47P92 = AJ2(J)*XIVIP(J,IM1)/2.0
4349.      PD48P92 = AJ2(J)*XIVIP(J,IM2)/2.0
4350.      PD62P92 = AJ2(J)/2.0
4351.      PD63P92 = AJ2(J)/2.0
4352.      TO=G2-1
4353.      T1=(G1=(PD17+PD62+PD2+PD47+PD32==2)+1)==TO
4354.      T2=PD17+PD62P92+PD17P92+PD62+PD2+PD47P92
4355.      T3=G1+G2+T1+T2
4356.      T4=(G1=(PD18+PD63+PD3+PD48+PD33==2)+1)==TO
4357.      T5=PD18+PD63P92+PD18P92+PD63+PD3+PD48P92
4358.      R2KPP92=(SG(IM1,J,K)=(G1+G2+T4+T5+S+T3)+G1+G2=SG(I,J,K)=T1+T2+S+G1
4359.      )*(G2+T4+T5+T3)/4.0
4360.      DANKP92=CIR=R2KPP92+S*TA33P
4361.      DAN = DANKP92
4362.
4363.      C P93

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4356. ELSEIF (CND(I,J,K,I,JP1,K)) THEN
4357. PD16P93 = AJ2(J)/2.0
4358. PD17P93 = AJ2(J)/2.0
4359. PD46P93 = AJ2(J)*XIYIP(J,I)/2.0
4360. PD47P93 = AJ2(J)*XIYIP(J,IM1)/2.0
4361. PD61P93 = AJ2(J)/2.0
4362. PD62P93 = AJ2(J)/2.0
4363. TO=G2-1
4364. T1=(G1+(PD17+PD62+PD2+PD47+PD32==2)+1)==TO
4365. T2=PD17+PD62P93+PD17P93+PD62+PD2+PD47P93
4366. R2KPP93=(SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2=(G1+(PD16+PD61+PD1+PD46+
4367. PD31==2)+1)==TO=(PD16+PD61P93+PD16P93+PD61+PD1+PD46P93))+G1+G2+SG
4368. (IM1,J,K)=T1+T2+G1+G2+T1+T2)/4.0
4369. DANP93=CIR=R2KPP93+S=TA33P
4370. DAN = DANP93
4371.
C P94
4372. ELSEIF (CND(I,J,K,I,JP1,K)) THEN
4373. PD16P94 = AJ2(J)/2.0
4374. PD46P94 = AJ2(J)*XIYIP(J,I)/2.0
4375. PD17P94 = AJ2(J)/2.0
4376. R2KPP94=(G1+G2+SG(I,J,K)=(G1+(PD16+PD61+PD1+PD46+PD31==2)+1)==(G2-1
4377. )+(PD16+PD61P94+PD16P94+PD61+PD1+PD46P94))/4.0
4378. DANP94=CIR=R2KPP94+S=TA33P
4379. DAN = DANP94
4380.
C P106
4381. ELSEIF (CND(I,J,K,IM2,JP1,KP1)) THEN
4382. PD30P106 = -(1.0/2.0+AJ1(J))
4383. PD60P106 = -(1.0/2.0+AJ1(J)*XIYIP(J,IM2))
4384. PD75P106 = -(1.0/2.0+AJ1(J))
4385. TO=(G1+(PD30+PD75+PD15+PD60+PD45==2)+1)==(G2-1)
4386. T1=PD30+PD75P106+PD30P106+PD75+PD15+PD60P106
4387. R2KPP106=(G1+G2+SG(IM1,J,KP1)=TO+T1+S+G1+G2=TO+T1)/4.0
4388. DANP106=CIR=R2KPP106+S=TA33P
4389. DAN = DANP106
4390.
C P107
4391. ELSEIF (CND(I,J,K,IM1,JP1,KP1)) THEN
4392. PD29P107 = -(1.0/2.0+AJ1(J))
4393. PD30P107 = -(1.0/2.0+AJ1(J))
4394. PD59P107 = -(1.0/2.0+AJ1(J)*XIYIP(J,IM1))
4395. PD60P107 = -(1.0/2.0+AJ1(J)*XIYIP(J,IM2))
4396. PD74P107 = -(1.0/2.0+AJ1(J))
4397. PD75P107 = -(1.0/2.0+AJ1(J))
4398. TO=G2-1
4399. T1=(G1+(PD29+PD74+PD14+PD59+PD44==2)+1)==TO
4400. T2=PD29+PD74P107+PD29P107+PD74+PD14+PD59P107
4401. T3=G1+G2+T1+T2
4402. T4=(G1+(PD30+PD75+PD15+PD60+PD45==2)+1)==TO
4403. T5=PD30+PD75P107+PD30P107+PD75+PD15+PD60P107
4404. R2KPP107=(SG(IM1,J,KP1)=(G1+G2+T4+T5+S+T3)+G1+G2+SG(I,J,KP1)=T1+T2
4405. +S+G1+G2+T4+T5+T3)/4.0
4406. DANP107=CIR=R2KPP107+S=TA33P
4407. DAN = DANP107
4408.
C P108
4409. ELSEIF (CND(I,J,K,I,JP1,KP1)) THEN
4410. PD28P108 = -(1.0/2.0+AJ1(J))
4411. PD29P108 = -(1.0/2.0+AJ1(J))
4412. PD58P108 = -(1.0/2.0+AJ1(J)*XIYIP(J,I))
4413. PD59P108 = -(1.0/2.0+AJ1(J)*XIYIP(J,IM1))
4414. PD73P108 = -(1.0/2.0+AJ1(J))
4415. PD74P108 = -(1.0/2.0+AJ1(J))
4416. TO=G2-1
4417. T1=(G1+(PD28+PD74+PD14+PD59+PD44==2)+1)==TO
4418. T2=PD28+PD74P108+PD28P108+PD74+PD14+PD59P108
4419. R2KPP108=(SG(I,J,KP1)=(G1+G2+T1+T2+S+G1+G2=(G1+(PD28+PD73+PD13+
4420. PD58+PD43==2)+1)==TO=(PD28+PD73P108+PD28P108+PD73+PD13+PD58P108))+
4421. G1+G2+SG(IM1,J,KP1)=T1+T2+G1+G2+T1+T2)/4.0
4422. DANP108=CIR=R2KPP108+S=TA33P
4423. DAN = DANP108
4424.
C P109
4425. ELSEIF (CND(I,J,K,I,JP1,JP1,KP1)) THEN
4426. PD28P109 = -(1.0/2.0+AJ1(J))
4427. PD58P109 = -(1.0/2.0+AJ1(J)*XIYIP(J,I))
4428. PD73P109 = -(1.0/2.0+AJ1(J))
4429. R2KPP109=(G1+G2+SG(I,J,KP1)=(G1+(PD28+PD73+PD13+PD58+PD43==2)+1)==(
4430. G2-1)=(PD28+PD73P109+PD28P109+PD73+PD13+PD58P108))/4.0
4431. DANP109=CIR=R2KPP109+S=TA33P
4432. DAN = DANP109
4433.
C P111
4434. ELSEIF (CND(I,J,K,IM2,J,KP1)) THEN
4435. PD15P111 = DXII(IM2)*S
4436. PD30P111 = (-AJ2(J)+AJ1(J))/2.0
4437. PD33P111 = A2K(K)/2.0
4438. PD45P111 = (-A2K(KP1)+A1K(KP1))/2.0
4439. PD60P111 = DXII(IM2)+A1IR(J,IM2)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/
4440. 2.0
4441. PD75P111 = DXII(IM2)*XIYIP(J,IM2)*S+(-AJ2(J)+AJ1(J))/2.0
4442. TO=G2-1
4443. T1=(G1+(PD18+PD63+PD3+PD48+PD33==2)+1)==TO
4444. T2=(G1+(PD30+PD75+PD15+PD60+PD45==2)+1)==TO
4445. T3=PD30+PD75P111+PD30P111+PD75+PD15+PD60P111+PD15P111+PD60+2+PD45+
4446. PD45P111
4447. R2KPP111=(G1+G2+SG(IM1,J,KP1)=T2+T3+S+2+G1+G2+SG(IM1,J,K)=PD33+
4448. PD33P111+T1+S+G1+G2+T2+T3+2+G1+G2+PD33+PD33P111+T1)/4.0
4449. DANP111=CIR=R2KPP111+S=TA33P
4450. DAN = DANP111
4451.
C P112
4452. ELSEIF (CND(I,J,K,IM1,J,KP1)) THEN
4453. PD14P112 = DXII(IM1)*S
4454. PD15P112 = DXII(IM2)
4455. PD29P112 = (-AJ2(J)+AJ1(J))/2.0
4456. PD30P112 = (-AJ2(J)+AJ1(J))/2.0
4457. PD32P112 = A2K(K)/2.0
4458. PD33P112 = A2K(K)/2.0
4459. PD44P112 = (-A2K(KP1)+A1K(KP1))/2.0
4460. PD45P112 = (-A2K(KP1)+A1K(KP1))/2.0
4461. PD59P112 = DXII(IM1)+A1IR(J,IM1)*S+(-AJ2(J)+AJ1(J))*XIYIP(J,IM1)/
4462. 2.0
4463. PD60P112 = (-AJ2(J)+AJ1(J))*XIYIP(J,IM2)/2.0+DXII(IM2)+A1IR(J,IM2)
4464. PD74P112 = DXII(IM1)*XIYIP(J,IM1)*S+(-AJ2(J)+AJ1(J))/2.0
4465. PD75P112 = DXII(IM2)*XIYIP(J,IM2)+(-AJ2(J)+AJ1(J))/2.0
4466. TO=G2-1
4467. T1=(G1+(PD17+PD62+PD2+PD47+PD32==2)+1)==TO
4468. T2=2+G1+G2+PD32+PD32P112+T1
4469. T3=(G1+(PD18+PD63+PD3+PD48+PD33==2)+1)==TO
4470. T4=(G1+(PD29+PD74+PD14+PD59+PD44==2)+1)==TO
4471. T5=PD29+PD74P112+PD29P112+PD74+PD14+PD59P112+PD14P112+PD59+2+PD44+
4472. PD44P112
4473. T6=G1+G2+T4+T5
4474. T7=(G1+(PD30+PD75+PD15+PD60+PD45==2)+1)==TO
4475. T8=PD30+PD75P112+PD30P112+PD75+PD15+PD60P112+PD15P112+PD60+2+PD45+
4476. PD45P112
4477. R2KPP112=(SG(IM1,J,KP1)=(G1+G2+T7+T8+S+T6)+SG(IM1,J,K)=(2+G1+G2+
4478. PD33+PD33P112+T3+S+T2)+G1+G2+SG(I,J,KP1)=T4+T6+S+2+G1+G2+SG(I,J,K
4479. )+PD32+PD32P112+T1+S+G1+G2+T7+T8+2+G1+G2+PD33+PD33P112+T3+T2)/
4480. 4.0
4481. DANP112=CIR=R2KPP112+S=TA33P
4482. DAN = DANP112
4483.
C P113
4484. ELSEIF (CND(I,J,K,I,J,KP1)) THEN
4485. PD13P113 = DXII(I)*S
4486. PD14P113 = DXII(IM1)
4487. PD28P113 = (-AJ2(J)+AJ1(J))/2.0

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4488. PD28P113 = [-AJ2(J)+AJ1(J)]/2.0
4489. PD31P113 = A2K(K)/2.0
4490. PD32P113 = A2K(K)/2.0
4491. PD43P113 = [-A2K(KP1)+A1K(KP1)]/2.0
4492. PD44P113 = [-A2K(KP1)+A1K(KP1)]/2.0
4493. PD58P113 = DX1(I)=A11R(J,I)+S+[-AJ2(J)+AJ1(J)]=XIYIP(J,I)/2.0
4494. PD59P113 = [-AJ2(J)+AJ1(J)]=XIYIP(J,IM1)/2.0+DX1(I)=A11R(J,IM1)
4495. PD73P113 = DX1(I)=XIYIP(J,I)+S+[-AJ2(J)+AJ1(J)]/2.0
4496. PD74P113 = DX1(IM1)=XIYIP(J,IM1)+[-AJ2(J)+AJ1(J)]/2.0
4497. TO=G2-1
4498. T1=[G1=(PD17+PD62+PD2=PD47+PD32==2)+1]==TO
4499. T2=[G1=(PD29+PD74+PD14=PD59+PD44==2)+1]==TO
4500. T3=PD29+PD74P113+PD29P113=PD74+PD14+PD59P113+PD14P113=PD59+2+PD44+
4501. PD44P113
4502. R2KPP113=[SG(I,J,KP1)=[G1=G2+T2+T3+S+G1=G2=[G1=(PD28+PD73+PD13+
4503. PD58+PD43==2)+1]==TO=(PD28+PD73P113+PD28P113+PD73+PD13+PD58P113+
4504. PD13P113=PD58+2+PD43=PD43P113)]+SG(I,J,K)=[2+G1=G2+PD32+PD32P113+
4505. T1+S+2+G1=G2+PD31=PD31P113=[G1=(PD18+PD61+PD1=PD46+PD31==2)+1]==
4506. TO]=[G1=G2+SG(IM1,J,KP1)=T2+T3+G1=G2+T2+T3+2+G1=G2+SG(IM1,J,K)=
4507. PD32+PD32P113+T1+2+G1=G2+PD32=PD32P113+T1]/4.0
4508. DANP113=CIR=R2KPP113+S=TA33P
4509. DAN = DANP113
4510.
4511. C P114
4512. ELSEIF [CND[II,JJ,KK,IP1,J,KP1]] THEN
4513. PD13P114 = DX1(I)
4514. PD28P114 = [-AJ2(J)+AJ1(J)]/2.0
4515. PD31P114 = A2K(K)/2.0
4516. PD43P114 = [-A2K(KP1)+A1K(KP1)]/2.0
4517. PD58P114 = [-AJ2(J)+AJ1(J)]=XIYIP(J,I)/2.0+DX1(I)=A11R(J,I)
4518. PD73P114 = DX1(I)=XIYIP(J,I)+[-AJ2(J)+AJ1(J)]/2.0
4519. TO=G2-1
4520. R2KPP114=[G1=G2+SG(I,J,KP1)=[G1=(PD28+PD73+PD13=PD58+PD43==2)+1]==
4521. TO=(PD28+PD73P114+PD28P114+PD73+PD13+PD58P114+PD13P114=PD58+2+
4522. PD43=PD43P114)+2+G1=G2+SG(I,J,K)=PD31=PD31P114=[G1=(PD18+PD61+PD1
4523. =PD46+PD31==2)+1]==TO]/4.0
4524. DANP114=CIR=R2KPP114+S=TA33P
4525. DAN = DANP114
4526.
4527. C P118
4528. ELSEIF [CND[II,JJ,KK,IM2,JP1,KP1]] THEN
4529. PD30P118 = AJ2(J)/2.0
4530. PD80P118 = AJ2(J)=XIYIP(J,IM2)/2.0
4531. PD75P118 = AJ2(J)/2.0
4532. TO=[G1=(PD30+PD75+PD15+PD80+PD45==2)+1]==(G2-1)
4533. T1=PD30+PD75P118+PD30P118+PD75+PD15+PD80P118
4534. R2KPP118=[G1=G2+SG(IM1,J,KP1)=TO+T1+S+G1=G2+TO+T1]/4.0
4535. DANP118=CIR=R2KPP118+S=TA33P
4536. DAN = DANP118
4537.
4538. C P117
4539. ELSEIF [CND[II,JJ,KK,IM1,JP1,KP1]] THEN
4540. PD28P117 = AJ2(J)/2.0
4541. PD30P117 = AJ2(J)/2.0
4542. PD58P117 = AJ2(J)=XIYIP(J,IM1)/2.0
4543. PD80P117 = AJ2(J)=XIYIP(J,IM2)/2.0
4544. PD74P117 = AJ2(J)/2.0
4545. PD75P117 = AJ2(J)/2.0
4546. TO=G2-1
4547. T1=[G1=(PD29+PD74+PD14=PD59+PD44==2)+1]==TO
4548. T2=PD29+PD74P117+PD29P117=PD74+PD14+PD59P117
4549. T3=G1=G2+T1=T2
4550. T4=[G1=(PD30+PD75+PD15+PD80+PD45==2)+1]==TO
4551. T5=PD30+PD75P117+PD30P117=PD75+PD15+PD80P117
4552. R2KPP117=[SG(IM1,J,KP1)=[G1=G2+T4+T5+S+T3]+G1=G2+SG(I,J,KP1)=T1=T2
4553. +S+G1=G2+T4+T5+T3]/4.0
4554. DANP117=CIR=R2KPP117+S=TA33P
4555. DAN = DANP117
4556.
4557. C P116
4558. ELSEIF [CND[II,JJ,KK,I,JP1,KP1]] THEN
4559. PD28P116 = AJ2(J)/2.0
4560. PD29P116 = AJ2(J)/2.0
4561. PD58P116 = AJ2(J)=XIYIP(J,I)/2.0
4562. PD59P116 = AJ2(J)=XIYIP(J,IM1)/2.0
4563. PD73P116 = AJ2(J)/2.0
4564. PD74P116 = AJ2(J)/2.0
4565. TO=G2-1
4566. T1=[G1=(PD29+PD74+PD14=PD59+PD44==2)+1]==TO
4567. T2=PD29+PD74P116+PD29P116=PD74+PD14+PD59P116
4568. R2KPP116=[SG(I,J,KP1)=[G1=G2+T1+T2+S+G1=G2=[G1=(PD28+PD73+PD13=
4569. PD58+PD43==2)+1]==TO=(PD28+PD73P116+PD28P116+PD73+PD13+PD58P116)
4570. +G1=G2+SG(IM1,J,KP1)=T1+T2+G1=G2+T1+T2]/4.0
4571. DANP116=CIR=R2KPP116+S=TA33P
4572. DAN = DANP116
4573.
4574. C P119
4575. ELSEIF [CND[II,JJ,KK,IP1,JP1,KP1]] THEN
4576. PD28P119 = AJ2(J)/2.0
4577. PD58P119 = AJ2(J)=XIYIP(J,I)/2.0
4578. PD73P119 = AJ2(J)/2.0
4579. R2KPP119=[G1=G2+SG(I,J,KP1)=[G1=(PD28+PD73+PD13=PD58+PD43==2)+1]==(
4580. G2-1)=(PD28+PD73P119+PD28P119=PD73+PD13+PD58P119)]/4.0
4581. DANP119=CIR=R2KPP119+S=TA33P
4582. DAN = DANP119
4583.
4584. C P136
4585. ELSEIF [CND[II,JJ,KK,IM2,J,KP2]] THEN
4586. PD46P136 = A2K(KP1)/2.0
4587. TO=[G1=(PD30+PD75+PD15+PD80+PD45==2)+1]==(G2-1)
4588. R2KPP136=[2+G1=G2+SG(IM1,J,KP1)=PD49+PD45P136+TO+S+2+G1=G2+PD45+
4589. PD45P136+TO]/4.0
4590. DANP136=CIR=R2KPP136+S=TA33P
4591. DAN = DANP136
4592.
4593. C P137
4594. ELSEIF [CND[II,JJ,KK,IM1,J,KP2]] THEN
4595. PD44P137 = A2K(KP1)/2.0
4596. PD46P137 = A2K(KP1)/2.0
4597. TO=G2-1
4598. T1=[G1=(PD29+PD74+PD14=PD59+PD44==2)+1]==TO
4599. T2=2+G1=G2+PD44=PD44P137+T1
4600. T3=[G1=(PD30+PD75+PD15+PD80+PD45==2)+1]==TO
4601. R2KPP137=[SG(IM1,J,KP1)=[2+G1=G2+PD45=PD45P137+T3+S+T2]+2+G1=G2+SG
4602. [I,J,KP1)=PD44=PD44P137+T1+S+2+G1=G2+PD45=PD45P137+T3+T2]/4.0
4603. DANP137=CIR=R2KPP137+S=TA33P
4604. DAN = DANP137
4605.
4606. C P138
4607. ELSEIF [CND[II,JJ,KK,I,J,KP2]] THEN
4608. PD43P138 = A2K(KP1)/2.0
4609. PD44P138 = A2K(KP1)/2.0
4610. TO=G2-1
4611. T1=[G1=(PD29+PD74+PD14=PD59+PD44==2)+1]==TO
4612. R2KPP138=[SG(I,J,KP1)=[2+G1=G2+PD44=PD44P138+T1+S+2+G1=G2+PD43=
4613. PD43P138=[G1=(PD28+PD73+PD13=PD58+PD43==2)+1]==TO]+2+G1=G2+SG(IM1
4614. ,J,KP1)=PD44+PD44P138+T1+2+G1=G2+PD44=PD44P138+T1]/4.0
4615. DANP138=CIR=R2KPP138+S=TA33P
4616. DAN = DANP138
4617.
4618. C P182
4619. ELSEIF [CND[II,JJ,KK,ITE,J,KLOW-2]] THEN
4620. PD31P182 = -(CC6=A2K(K)=S)
4621. PD32P182 = -(CC6=A2K(K)=S)

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4620. PD33P182 = -(CC5=A2K(K)=S)
4621. PD43P182 = -(CC6=A2K(KP1)=S)
4622. PD44P182 = -(CC6=A2K(KP1)=S)
4623. PD45P182 = -(CC6=A2K(KP1)=S)
4624. TO=G2-1
4625. T1=[G1=[PD17=PD62+PD2=PD47+PD32==2)+1]==TO
4626. T2=2+G1=G2+PD32=PD32P182+T1
4627. T3=[G1=[PD18=PD63+PD3=PD48+PD33==2)+1]==TO
4628. T4=[G1=[PD29=PD74+PD14=PD59+PD44==2)+1]==TO
4629. T5=2+G1=G2+PD44=PD44P182+T4
4630. T6=[G1=[PD30=PD75+PD15=PD60+PD45==2)+1]==TO
4631. R2KPP182=(SG[IM1,J,KP1])=[2+G1=G2+PD45=PD45P182+T6+S+T5]+SG[I,J,KP1
4632. ]=[2+G1=G2+PD44=PD44P182+T4+S+2+G1=G2+PD43=PD43P182=(G1=[PD28=
4633. PD73+PD13=PD58+PD43==2)+1]==TO)+SG[IM1,J,K]=[2+G1=G2+PD33=
4634. PD33P182+T3+S+T2]+SG[I,J,K]=[2+G1=G2+PD32=PD32P182+T1+S+2+G1=G2+
4635. PD31=PD31P182=(G1=[PD16=PD61+PD1=PD46+PD31==2)+1]==TO)+2+G1=G2+
4636. PD45=PD45P182+T6+T5+2+G1=G2+PD33=PD33P182+T3+T2]/4.0
4637. CIRP182=CC6=S
4638. DANP182=CIR=R2KPP182+S+TA33P+CIRP182=R2KP=S+TA33P
4639. DAN = DANP182
4640.
C P183
4641. ELSEIF (CND([I,JJ,KK,ITE,J,KLOW-1])) THEN
4642. PD31P183 = -(CC5=A2K(K))
4643. PD32P183 = -(CC5=A2K(K))
4644. PD33P183 = -(CC5=A2K(K))
4645. PD43P183 = -(CC5=A2K(KP1))
4646. PD44P183 = -(CC5=A2K(KP1))
4647. PD45P183 = -(CC5=A2K(KP1))
4648. TO=G2-1
4649. T1=[G1=[PD17=PD62+PD2=PD47+PD32==2)+1]==TO
4650. T2=2+G1=G2+PD32=PD32P183+T1
4651. T3=[G1=[PD18=PD63+PD3=PD48+PD33==2)+1]==TO
4652. T4=[G1=[PD29=PD74+PD14=PD59+PD44==2)+1]==TO
4653. T5=2+G1=G2+PD44=PD44P183+T4
4654. T6=[G1=[PD30=PD75+PD15=PD60+PD45==2)+1]==TO
4655. R2KPP183=(SG[IM1,J,KP1])=[2+G1=G2+PD45=PD45P183+T6+S+T5]+SG[I,J,KP1
4656. ]=[2+G1=G2+PD44=PD44P183+T4+S+2+G1=G2+PD43=PD43P183=(G1=[PD28=
4657. PD73+PD13=PD58+PD43==2)+1]==TO)+SG[IM1,J,K]=[2+G1=G2+PD33=
4658. PD33P183+T3+S+T2]+SG[I,J,K]=[2+G1=G2+PD32=PD32P183+T1+S+2+G1=G2+
4659. PD31=PD31P183=(G1=[PD16=PD61+PD1=PD46+PD31==2)+1]==TO)+2+G1=G2+
4660. PD45=PD45P183+T6+T5+2+G1=G2+PD33=PD33P183+T3+T2]/4.0
4661. CIRP183=CC5
4662. DANP183=CIR=R2KPP183+S+TA33P+CIRP183=R2KP=S+TA33P
4663. DAN = DANP183
4664.
C P184
4665. ELSEIF (CND([I,JJ,KK,ITE,J,KLOW])) THEN
4666. PD31P184 = -(CC4=A2K(K)=S)
4667. PD32P184 = -(CC4=A2K(K)=S)
4668. PD33P184 = -(CC4=A2K(K)=S)
4669. PD43P184 = -(CC4=A2K(KP1)=S)
4670. PD44P184 = -(CC4=A2K(KP1)=S)
4671. PD45P184 = -(CC4=A2K(KP1)=S)
4672. TO=G2-1
4673. T1=[G1=[PD17=PD62+PD2=PD47+PD32==2)+1]==TO
4674. T2=2+G1=G2+PD32=PD32P184+T1
4675. T3=[G1=[PD18=PD63+PD3=PD48+PD33==2)+1]==TO
4676. T4=[G1=[PD29=PD74+PD14=PD59+PD44==2)+1]==TO
4677. T5=2+G1=G2+PD44=PD44P184+T4
4678. T6=[G1=[PD30=PD75+PD15=PD60+PD45==2)+1]==TO
4679. R2KPP184=(SG[IM1,J,KP1])=[2+G1=G2+PD45=PD45P184+T6+S+T5]+SG[I,J,KP1
4680. ]=[2+G1=G2+PD44=PD44P184+T4+S+2+G1=G2+PD43=PD43P184=(G1=[PD28=
4681. PD73+PD13=PD58+PD43==2)+1]==TO)+SG[IM1,J,K]=[2+G1=G2+PD33=
4682. PD33P184+T3+S+T2]+SG[I,J,K]=[2+G1=G2+PD32=PD32P184+T1+S+2+G1=G2+
4683. PD31=PD31P184=(G1=[PD16=PD61+PD1=PD46+PD31==2)+1]==TO)+2+G1=G2+
4684. PD45=PD45P184+T6+T5+2+G1=G2+PD33=PD33P184+T3+T2]/4.0
4685. CIRP184=CC4=S
4686. DANP184=CIR=R2KPP184+S+TA33P+CIRP184=R2KP=S+TA33P
4687. DAN = DANP184
4688.
C P185
4689. ELSEIF (CND([I,JJ,KK,ITE,J,KUP])) THEN
4690. PD31P185 = -(CC1=A2K(K))
4691. PD32P185 = -(CC1=A2K(K))
4692. PD33P185 = -(CC1=A2K(K))
4693. PD43P185 = -(CC1=A2K(KP1))
4694. PD44P185 = -(CC1=A2K(KP1))
4695. PD45P185 = -(CC1=A2K(KP1))
4696. TO=G2-1
4697. T1=[G1=[PD17=PD62+PD2=PD47+PD32==2)+1]==TO
4698. T2=2+G1=G2+PD32=PD32P185+T1
4699. T3=[G1=[PD18=PD63+PD3=PD48+PD33==2)+1]==TO
4700. T4=[G1=[PD29=PD74+PD14=PD59+PD44==2)+1]==TO
4701. T5=2+G1=G2+PD44=PD44P185+T4
4702. T6=[G1=[PD30=PD75+PD15=PD60+PD45==2)+1]==TO
4703. R2KPP185=(SG[IM1,J,KP1])=[2+G1=G2+PD45=PD45P185+T6+S+T5]+SG[I,J,KP1
4704. ]=[2+G1=G2+PD44=PD44P185+T4+S+2+G1=G2+PD43=PD43P185=(G1=[PD28=
4705. PD73+PD13=PD58+PD43==2)+1]==TO)+SG[IM1,J,K]=[2+G1=G2+PD33=
4706. PD33P185+T3+S+T2]+SG[I,J,K]=[2+G1=G2+PD32=PD32P185+T1+S+2+G1=G2+
4707. PD31=PD31P185=(G1=[PD16=PD61+PD1=PD46+PD31==2)+1]==TO)+2+G1=G2+
4708. PD45=PD45P185+T6+T5+2+G1=G2+PD33=PD33P185+T3+T2]/4.0
4709. CIRP185=CC1
4710. DANP185=CIR=R2KPP185+S+TA33P+CIRP185=R2KP=S+TA33P
4711. DAN = DANP185
4712.
C P186
4713. ELSEIF (CND([I,JJ,KK,ITE,J,KUP-1])) THEN
4714. PD31P186 = -(CC2=A2K(K)=S)
4715. PD32P186 = -(CC2=A2K(K)=S)
4716. PD33P186 = -(CC2=A2K(K)=S)
4717. PD43P186 = -(CC2=A2K(KP1)=S)
4718. PD44P186 = -(CC2=A2K(KP1)=S)
4719. PD45P186 = -(CC2=A2K(KP1)=S)
4720. TO=G2-1
4721. T1=[G1=[PD17=PD62+PD2=PD47+PD32==2)+1]==TO
4722. T2=2+G1=G2+PD32=PD32P186+T1
4723. T3=[G1=[PD18=PD63+PD3=PD48+PD33==2)+1]==TO
4724. T4=[G1=[PD29=PD74+PD14=PD59+PD44==2)+1]==TO
4725. T5=2+G1=G2+PD44=PD44P186+T4
4726. T6=[G1=[PD30=PD75+PD15=PD60+PD45==2)+1]==TO
4727. R2KPP186=(SG[IM1,J,KP1])=[2+G1=G2+PD45=PD45P186+T6+S+T5]+SG[I,J,KP1
4728. ]=[2+G1=G2+PD44=PD44P186+T4+S+2+G1=G2+PD43=PD43P186=(G1=[PD28=
4729. PD73+PD13=PD58+PD43==2)+1]==TO)+SG[IM1,J,K]=[2+G1=G2+PD33=
4730. PD33P186+T3+S+T2]+SG[I,J,K]=[2+G1=G2+PD32=PD32P186+T1+S+2+G1=G2+
4731. PD31=PD31P186=(G1=[PD16=PD61+PD1=PD46+PD31==2)+1]==TO)+2+G1=G2+
4732. PD45=PD45P186+T6+T5+2+G1=G2+PD33=PD33P186+T3+T2]/4.0
4733. CIRP186=CC2=S
4734. DANP186=CIR=R2KPP186+S+TA33P+CIRP186=R2KP=S+TA33P
4735. DAN = DANP186
4736.
C P187
4737. ELSEIF (CND([I,JJ,KK,ITE,J,KUP+2])) THEN
4738. PD31P187 = -(CC3=A2K(K))
4739. PD32P187 = -(CC3=A2K(K))
4740. PD33P187 = -(CC3=A2K(K))
4741. PD43P187 = -(CC3=A2K(KP1))
4742. PD44P187 = -(CC3=A2K(KP1))
4743. PD45P187 = -(CC3=A2K(KP1))
4744. TO=G2-1
4745. T1=[G1=[PD17=PD62+PD2=PD47+PD32==2)+1]==TO
4746. T2=2+G1=G2+PD32=PD32P187+T1
4747. T3=[G1=[PD18=PD63+PD3=PD48+PD33==2)+1]==TO
4748. T4=[G1=[PD29=PD74+PD14=PD59+PD44==2)+1]==TO
4749. T5=2+G1=G2+PD44=PD44P187+T4
4750. T6=[G1=[PD30=PD75+PD15=PD60+PD45==2)+1]==TO
4751. R2KPP187=(SG[IM1,J,KP1])=[2+G1=G2+PD45=PD45P187+T6+S+T5]+SG[I,J,KP1

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4752.      )=[2+G1+G2+PD44+PD44P187+T4+S+2+G1+G2+PD43+PD43P187+(G1=[PD28+
4753.      PD73+PD13+PD58+PD43==2)+1]==To)+SG(IM1,J,K)=[2+G1+G2+PD33+
4754.      PD33P187+T3+S+T2)+SG(I,J,K)=[2+G1+G2+PD32+PD32P187+T1+S+2+G1+G2+
4755.      PD31+PD31P187+(G1=[PD18+PD81+PD1+PD46+PD31==2)+1]==To)+2+G1+G2+
4756.      PD45+PD45P187+T6+T5+2+G1+G2+PD33+PD33P187+T3+T2)/4.0
4757.      CIRP187+CCC
4758.      DANP187+CIR+R2KPP187+S+TA33P+CIRP187+R2KP+S+TA33P
4759.      DAN = DANP187
4760.      ENDIF
4761.
4762.      RETURN
4763.      END
4764.      SUBROUTINE RS(J,I,K,RHSM,RHSA,RHST,RHSC,RHSL)
4765.      RMDEAS.FOR
4766.
4767.      INCLUDE (INTROS)
4768.
4769.      C
4770.      C
4771.      C
4772.      C
4773.      P
4774.      P36 = P(J,KM2,IM2)
4775.      P37 = P(J,KM2,IM1)
4776.      P38 = P(J,KM2,I)
4777.      P39 = P(J,KM2,IP1)
4778.      P58 = P(JM1,KM1,IM2)
4779.      P57 = P(JM1,KM1,IM1)
4780.      P56 = P(JM1,KM1,I)
4781.      P59 = P(JM1,KM1,IP1)
4782.      P61 = P(J,KM1,IM2)
4783.      P62 = P(J,KM1,IM1)
4784.      P63 = P(J,KM1,I)
4785.      P64 = P(J,KM1,IP1)
4786.      P65 = P(JP1,KM1,IM2)
4787.      P67 = P(JP1,KM1,IM1)
4788.      P68 = P(JP1,KM1,I)
4789.      P69 = P(JP1,KM1,IP1)
4790.      P76 = P(JM2,K,IM2)
4791.      P77 = P(JM2,K,IM1)
4792.      P78 = P(JM2,K,I)
4793.      P79 = P(JM2,K,IP1)
4794.      P81 = P(JM1,K,IM2)
4795.      P82 = P(JM1,K,IM1)
4796.      P83 = P(JM1,K,I)
4797.      P84 = P(JM1,K,IP1)
4798.      P85 = P(J,K,IM2)
4799.      P87 = P(J,K,IM1)
4800.      P88 = P(J,K,I)
4801.      P89 = P(J,K,IP1)
4802.      P91 = P(JP1,K,IM2)
4803.      P92 = P(JP1,K,IM1)
4804.      P93 = P(JP1,K,I)
4805.      P94 = P(JP1,K,IP1)
4806.      P96 = P(JP2,K,IM2)
4807.      P97 = P(JP2,K,IM1)
4808.      P98 = P(JP2,K,I)
4809.      P99 = P(JP2,K,IP1)
4810.      P108 = P(JM1,KP1,IM2)
4811.      P107 = P(JM1,KP1,IM1)
4812.      P108 = P(JM1,KP1,I)
4813.      P109 = P(JM1,KP1,IP1)
4814.      P111 = P(J,KP1,IM2)
4815.      P112 = P(J,KP1,IM1)
4816.      P113 = P(J,KP1,I)
4817.      P114 = P(J,KP1,IP1)
4818.      P116 = P(JP1,KP1,IM2)
4819.      P117 = P(JP1,KP1,IM1)
4820.      P118 = P(JP1,KP1,I)
4821.      P119 = P(JP1,KP1,IP1)
4822.      P136 = P(J,KP2,IM2)
4823.      P137 = P(J,KP2,IM1)
4824.      P138 = P(J,KP2,I)
4825.      P139 = P(J,KP2,IP1)
4826.
4827.      C
4828.      C
4829.      C
4830.      P0
4831.      P01 = DXII(I)=[(P86+S+P88)+OXINF/XIXIP(J,I)]
4832.      P02 = DXII(IM1)=[(P87+S+P88)+OXINF/XIXIP(J,IM1)]
4833.      P03 = DXII(IM2)=[(P86+S+P87)+OXINF/XIXIP(J,IM2)]
4834.      P04 = DXII(I)=[(P83+S+P84)+OXINF/XIXIP(JM1,I)]
4835.      P05 = DXII(IM1)=[(P82+S+P83)+OXINF/XIXIP(JM1,IM1)]
4836.      P06 = DXII(IM2)=[(P81+S+P82)+OXINF/XIXIP(JM1,IM2)]
4837.      P07 = DXII(I)=[(P83+S+P84)+OXINF/XIXIP(J,I)]
4838.      P08 = DXII(IM1)=[(P82+S+P83)+OXINF/XIXIP(J,IM1)]
4839.      P09 = DXII(IM2)=[(P81+S+P82)+OXINF/XIXIP(J,IM2)]
4840.      P010 = DXII(I)=[(P93+S+P94)+OXINF/XIXIP(JP1,I)]
4841.      P011 = DXII(IM1)=[(P92+S+P93)+OXINF/XIXIP(JP1,IM1)]
4842.      P012 = DXII(IM2)=[(P91+S+P92)+OXINF/XIXIP(JP1,IM2)]
4843.      P013 = DXII(I)=[(P113+S+P114)+OXINF/XIXIP(J,I)]
4844.      P014 = DXII(IM1)=[(P112+S+P113)+OXINF/XIXIP(J,IM1)]
4845.      P015 = DXII(IM2)=[(P111+S+P112)+OXINF/XIXIP(J,IM2)]
4846.      P016 = XIXIP(J,I)=[OXINF+S/XIXIP(J,I)+[AJ2(J)=[(P94+P93-P89-P88)+AJ1
4847.      (J)=[(P89+P88-P84-P83)]/2.0
4848.      P017 = XIXIP(J,IM1)=[OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[(P93+P92-P88-P87)
4849.      +AJ1(J)=[(P88+P87-P83-P82)]/2.0
4850.      P018 = XIXIP(J,IM2)=[OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[(P92+P91-P87-P86)
4851.      +AJ1(J)=[(P87+P86-P82-P81)]/2.0
4852.      P019 = XIXIP(JM1,I)=[OXINF+S/XIXIP(JM1,I)+[AJ2(JM1)=[(P88+P88-P84-
4853.      P83)+AJ1(JM1)=[(P84+P83-P79-P78)]/2.0
4854.      P020 = XIXIP(JM1,IM1)=[OXINF+S/XIXIP(JM1,IM1)+[AJ2(JM1)=[(P88+P87-
4855.      P83-P82)+AJ1(JM1)=[(P83+P82-P78-P77)]/2.0
4856.      P021 = XIXIP(JM1,IM2)=[OXINF+S/XIXIP(JM1,IM2)+[AJ2(JM1)=[(P87+P86-
4857.      P82-P81)+AJ1(JM1)=[(P82+P81-P77-P76)]/2.0
4858.      P022 = XIXIP(J,I)=[OXINF+S/XIXIP(J,I)+[AJ2(J)=[(P89+P88-P84-P83)+AJ1
4859.      (J)=[(P84+P83-P79-P78)]/2.0
4860.      P023 = XIXIP(J,IM1)=[OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[(P88+P87-P83-P82)
4861.      +AJ1(J)=[(P83+P82-P78-P77)]/2.0
4862.      P024 = XIXIP(J,IM2)=[OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[(P87+P86-P82-P81)
4863.      +AJ1(J)=[(P82+P81-P77-P76)]/2.0
4864.      P025 = XIXIP(JP1,I)=[OXINF+S/XIXIP(JP1,I)+[AJ2(JP1)=[(P98+P98-P94-
4865.      P93)+AJ1(JP1)=[(P94+P93-P88-P87)]/2.0
4866.      P026 = XIXIP(JP1,IM1)=[OXINF+S/XIXIP(JP1,IM1)+[AJ2(JP1)=[(P98+P97-
4867.      P93-P92)+AJ1(JP1)=[(P93+P92-P88-P87)]/2.0
4868.      P027 = XIXIP(JP1,IM2)=[OXINF+S/XIXIP(JP1,IM2)+[AJ2(JP1)=[(P97+P96-
4869.      P92-P91)+AJ1(JP1)=[(P92+P91-P87-P86)]/2.0
4870.      P028 = XIXIP(J,I)=[OXINF+S/XIXIP(J,I)+[AJ2(J)=[(P119+P118-P114-P113)
4871.      +AJ1(J)=[(P114+P113-P109-P108)]/2.0
4872.      P029 = XIXIP(J,IM1)=[OXINF+S/XIXIP(J,IM1)+[AJ2(J)=[(P118+P117-P113-
4873.      P112)+AJ1(J)=[(P113+P112-P108-P107)]/2.0
4874.      P030 = XIXIP(J,IM2)=[OXINF+S/XIXIP(J,IM2)+[AJ2(J)=[(P117+P116-P112-
4875.      P111)+AJ1(J)=[(P112+P111-P107-P106)]/2.0
4876.      P031 = OZINF+[A1K(K)=[(P89+P88-P84-P83)+A2K(K)=[(-P89-P88+P114+P113)
4877.      ]/2.0
4878.      P032 = OZINF+[A1K(K)=[(P88+P87-P83-P82)+A2K(K)=[(-P88-P87+P113+P112)
4879.      ]/2.0
4880.      P033 = OZINF+[A1K(K)=[(P87+P86-P82-P81)+A2K(K)=[(-P87-P86+P112+P111)
4881.      ]/2.0
4882.      P034 = OZINF+[A1K(K)=[(P84+P83-P79-P78)+A2K(K)=[(-P84-P83+P109+P108)
4883.      ]/2.0
4884.      P035 = OZINF+[A1K(K)=[(P83+P82-P78-P77)+A2K(K)=[(-P83-P82+P108+P107)
4885.      ]/2.0
4886.      P036 = OZINF+[A1K(K)=[(P82+P81-P77-P76)+A2K(K)=[(-P82-P81+P107+P106)
4887.      ]/2.0
4888.      P037 = OZINF+[A2K(KM1)=[(P89+P88-P84-P83)+A1K(KM1)=[(P84+P83-P79-P78)

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4884.      )/2.0
4885.      P038 = QZINF+(A2K(KM1))+(P88+P87-P83-P82)+A1K(KM1)+(P83+P82-P38-P37
4886.      )/2.0
4887.      P039 = QZINF+(A2K(KM1))+(P87+P88-P82-P81)+A1K(KM1)+(P82+P81-P37-P36
4888.      )/2.0
4889.      P040 = QZINF+(A1K(K))+(P84+P93-P85-P84)+A2K(K)=(-P94-P93+P119+P118)
4890.      )/2.0
4891.      P041 = QZINF+(A1K(K))+(P93+P92-P88-P87)+A2K(K)=(-P93-P92+P118+P117)
4892.      )/2.0
4893.      P042 = QZINF+(A1K(K))+(P92+P91-P87-P86)+A2K(K)=(-P92-P91+P117+P116)
4894.      )/2.0
4895.      P043 = QZINF+(A1K(KP1))=(-P85-P88+P114+P113)+A2K(KP1)=(P139+P138-
4896.      P114-P113))/2.0
4897.      P044 = QZINF+(A1K(KP1))=(-P88-P87+P113+P112)+A2K(KP1)=(P138+P137-
4898.      P113-P112))/2.0
4899.      P045 = QZINF+(A1K(KP1))=(-P87-P86+P112+P111)+A2K(KP1)=(P137+P136-
4900.      P112-P111))/2.0
4901.      P046 = A1IR(J,I)=(DXII(I))=(P88+S+P89)+OXINF/XIXIP(J,I)+XIXIP(J,I)
4902.      =XIXIP(J,I)+OXINF+S/XIXIP(J,I)+(AJ2(J))=(P94+P93-P85-P84)+AJ1(J)=
4903.      (P89+P88-P84-P83))/2.0
4904.      P047 = A1IR(J,IM1)=(DXII(IM1))=(P87+S+P88)+OXINF/XIXIP(J,IM1)+
4905.      XIXIP(J,IM1)=XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+(AJ2(J))=(P93+P92-
4906.      P88-P87)+AJ1(J)=(P88+P87-P83-P82))/2.0
4907.      P048 = A1IR(J,IM2)=(DXII(IM2))=(P88+S+P87)+OXINF/XIXIP(J,IM2)+
4908.      XIXIP(J,IM2)=XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+(AJ2(J))=(P92+P91-
4909.      P87-P86)+AJ1(J)=(P87+P86-P82-P81))/2.0
4910.      P049 = A1IR(JM1,I)=(DXII(I))=(P83+S+P84)+OXINF/XIXIP(JM1,I)+XIXIP(
4911.      JM1,I)=XIXIP(JM1,I)+OXINF+S/XIXIP(JM1,I)+(AJ2(JM1))=(P89+P88-P84-
4912.      P83)+AJ1(JM1)=(P84+P83-P79-P78))/2.0
4913.      P050 = A1IR(JM1,IM1)=(DXII(IM1))=(P82+S+P83)+OXINF/XIXIP(JM1,IM1)+
4914.      XIXIP(JM1,IM1)=XIXIP(JM1,IM1)+OXINF+S/XIXIP(JM1,IM1)+(AJ2(JM1))=(
4915.      P88+P87-P83-P82)+AJ1(JM1)=(P83+P82-P78-P77))/2.0
4916.      P051 = A1IR(JM1,IM2)=(DXII(IM2))=(P81+S+P82)+OXINF/XIXIP(JM1,IM2)+
4917.      XIXIP(JM1,IM2)=XIXIP(JM1,IM2)+OXINF+S/XIXIP(JM1,IM2)+(AJ2(JM1))=(
4918.      P87+P86-P82-P81)+AJ1(JM1)=(P82+P81-P77-P76))/2.0
4919.      P052 = A1IR(J,I)=(DXII(I))=(P83+S+P84)+OXINF/XIXIP(J,I)+XIXIP(J,I)
4920.      =XIXIP(J,I)+OXINF+S/XIXIP(J,I)+(AJ2(J))=(P89+P88-P84-P83)+AJ1(J)=
4921.      (P84+P83-P89-P84))/2.0
4922.      P053 = A1IR(J,IM1)=(DXII(IM1))=(P82+S+P83)+OXINF/XIXIP(J,IM1)+
4923.      XIXIP(J,IM1)=XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+(AJ2(J))=(P88+P87-
4924.      P83-P82)+AJ1(J)=(P83+P82-P84-P83))/2.0
4925.      P054 = A1IR(J,IM2)=(DXII(IM2))=(P81+S+P82)+OXINF/XIXIP(J,IM2)+
4926.      XIXIP(J,IM2)=XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+(AJ2(J))=(P87+P86-
4927.      P82-P81)+AJ1(J)=(P82+P81-P87-P86))/2.0
4928.      P055 = A1IR(JP1,I)=(DXII(I))=(P83+S+P84)+OXINF/XIXIP(JP1,I)+XIXIP(
4929.      JP1,I)=XIXIP(JP1,I)+OXINF+S/XIXIP(JP1,I)+(AJ2(JP1))=(P89+P88-P84-
4930.      P83)+AJ1(JP1)=(P84+P83-P89-P88))/2.0
4931.      P056 = A1IR(JP1,IM1)=(DXII(IM1))=(P82+S+P83)+OXINF/XIXIP(JP1,IM1)+
4932.      XIXIP(JP1,IM1)=XIXIP(JP1,IM1)+OXINF+S/XIXIP(JP1,IM1)+(AJ2(JP1))=(
4933.      P88+P87-P83-P82)+AJ1(JP1)=(P83+P82-P88-P87))/2.0
4934.      P057 = A1IR(JP1,IM2)=(DXII(IM2))=(P81+S+P82)+OXINF/XIXIP(JP1,IM2)+
4935.      XIXIP(JP1,IM2)=XIXIP(JP1,IM2)+OXINF+S/XIXIP(JP1,IM2)+(AJ2(JP1))=(
4936.      P87+P86-P82-P81)+AJ1(JP1)=(P82+P81-P87-P86))/2.0
4937.      P058 = A1IR(J,I)=(DXII(I))=(P113+S+P114)+OXINF/XIXIP(J,I)+XIXIP(J,
4938.      I)=XIXIP(J,I)+OXINF+S/XIXIP(J,I)+(AJ2(J))=(P119+P118-P114-P113)+
4939.      AJ1(J)=(P114+P113-P109-P108))/2.0
4940.      P059 = A1IR(J,IM1)=(DXII(IM1))=(P112+S+P113)+OXINF/XIXIP(J,IM1)+
4941.      XIXIP(J,IM1)=XIXIP(J,IM1)+OXINF+S/XIXIP(J,IM1)+(AJ2(J))=(P118+
4942.      P117-P113-P112)+AJ1(J)=(P113+P112-P108-P107))/2.0
4943.      P060 = A1IR(J,IM2)=(DXII(IM2))=(P111+S+P112)+OXINF/XIXIP(J,IM2)+
4944.      XIXIP(J,IM2)=XIXIP(J,IM2)+OXINF+S/XIXIP(J,IM2)+(AJ2(J))=(P117+
4945.      P116-P112-P111)+AJ1(J)=(P112+P111-P107-P106))/2.0
4946.      P061 = XIXIP(J,I)=(DXII(I))=(P88+S+P89)+OXINF/XIXIP(J,I)+XIXIP(J,I)
4947.      =OXINF+S/XIXIP(J,I)+(AJ2(J))=(P94+P93-P88-P88)+AJ1(J)=(P89+P88-
4948.      P84-P83))/2.0
4949.      P062 = XIXIP(J,IM1)=(DXII(IM1))=(P87+S+P88)+OXINF/XIXIP(J,IM1)+
4950.      XIXIP(J,IM1)=OXINF+S/XIXIP(J,IM1)+(AJ2(J))=(P93+P92-P88-P87)+AJ1(J)
4951.      =(P88+P87-P83-P82))/2.0
4952.      P063 = XIXIP(J,IM2)=(DXII(IM2))=(P86+S+P87)+OXINF/XIXIP(J,IM2)+
4953.      XIXIP(J,IM2)=OXINF+S/XIXIP(J,IM2)+(AJ2(J))=(P92+P91-P87-P86)+AJ1(J)
4954.      =(P87+P86-P82-P81))/2.0
4955.      P064 = XIXIP(JM1,I)=(DXII(I))=(P83+S+P84)+OXINF/XIXIP(JM1,I)+XIXIP(
4956.      JM1,I)=OXINF+S/XIXIP(JM1,I)+(AJ2(JM1))=(P89+P88-P84-P83)+AJ1(JM1)
4957.      =(P84+P83-P79-P78))/2.0
4958.      P065 = XIXIP(JM1,IM1)=(DXII(IM1))=(P82+S+P83)+OXINF/XIXIP(JM1,IM1)+
4959.      XIXIP(JM1,IM1)=OXINF+S/XIXIP(JM1,IM1)+(AJ2(JM1))=(P88+P87-P83-P82)
4960.      +AJ1(JM1)=(P83+P82-P78-P77))/2.0
4961.      P066 = XIXIP(JM1,IM2)=(DXII(IM2))=(P81+S+P82)+OXINF/XIXIP(JM1,IM2)+
4962.      XIXIP(JM1,IM2)=OXINF+S/XIXIP(JM1,IM2)+(AJ2(JM1))=(P87+P86-P82-P81)
4963.      +AJ1(JM1)=(P82+P81-P77-P76))/2.0
4964.      P067 = XIXIP(J,I)=(DXII(I))=(P83+S+P84)+OXINF/XIXIP(J,I)+XIXIP(J,I)
4965.      =OXINF+S/XIXIP(J,I)+(AJ2(J))=(P89+P88-P84-P83)+AJ1(J)=(P84+P83-
4966.      P89-P88))/2.0
4967.      P068 = XIXIP(J,IM1)=(DXII(IM1))=(P82+S+P83)+OXINF/XIXIP(J,IM1)+
4968.      XIXIP(J,IM1)=OXINF+S/XIXIP(J,IM1)+(AJ2(J))=(P88+P87-P83-P82)+AJ1(J)
4969.      =(P83+P82-P88-P87))/2.0
4970.      P069 = XIXIP(J,IM2)=(DXII(IM2))=(P81+S+P82)+OXINF/XIXIP(J,IM2)+
4971.      XIXIP(J,IM2)=OXINF+S/XIXIP(J,IM2)+(AJ2(J))=(P87+P86-P82-P81)+AJ1(J)
4972.      =(P82+P81-P87-P86))/2.0
4973.      P070 = XIXIP(JP1,I)=(DXII(I))=(P93+S+P94)+OXINF/XIXIP(JP1,I)+XIXIP(
4974.      JP1,I)=OXINF+S/XIXIP(JP1,I)+(AJ2(JP1))=(P89+P88-P84-P83)+AJ1(JP1)
4975.      =(P84+P83-P89-P88))/2.0
4976.      P071 = XIXIP(JP1,IM1)=(DXII(IM1))=(P92+S+P93)+OXINF/XIXIP(JP1,IM1)+
4977.      XIXIP(JP1,IM1)=OXINF+S/XIXIP(JP1,IM1)+(AJ2(JP1))=(P88+P87-P83-P82)
4978.      +AJ1(JP1)=(P83+P82-P88-P87))/2.0
4979.      P072 = XIXIP(JP1,IM2)=(DXII(IM2))=(P91+S+P92)+OXINF/XIXIP(JP1,IM2)+
4980.      XIXIP(JP1,IM2)=OXINF+S/XIXIP(JP1,IM2)+(AJ2(JP1))=(P87+P86-P82-P81)
4981.      +AJ1(JP1)=(P82+P81-P87-P86))/2.0
4982.      P073 = XIXIP(J,I)=(DXII(I))=(P113+S+P114)+OXINF/XIXIP(J,I)+XIXIP(J,
4983.      I)=OXINF+S/XIXIP(J,I)+(AJ2(J))=(P119+P118-P114-P113)+AJ1(J)=(P114
4984.      +P113-P109-P108))/2.0
4985.      P074 = XIXIP(J,IM1)=(DXII(IM1))=(P112+S+P113)+OXINF/XIXIP(J,IM1)+
4986.      XIXIP(J,IM1)=OXINF+S/XIXIP(J,IM1)+(AJ2(J))=(P118+P117-P113-P112)+
4987.      AJ1(J)=(P113+P112-P108-P107))/2.0
4988.      P075 = XIXIP(J,IM2)=(DXII(IM2))=(P111+S+P112)+OXINF/XIXIP(J,IM2)+
4989.      XIXIP(J,IM2)=OXINF+S/XIXIP(J,IM2)+(AJ2(J))=(P117+P116-P112-P111)+
4990.      AJ1(J)=(P112+P111-P107-P106))/2.0
4991.
4992.      RIP,RIM,RJ, RK, RJP, RKP
4993.
4994.      TO1=(G1=(P017+P062+P02+P047+P032+2)+1)=G2
4995.      RIP=SG(I,J,K)=(TO+S+(G1=(P018+P061+P01+P046+P031+2)+1)=G2)+TO
4996.      TO2=(G1=(P018+P063+P03+P048+P033+2)+1)=G2
4997.      RIM=SG(IM1,J,K)=(TO+S+(G1=(P017+P062+P02+P047+P032+2)+1)=G2)+TO
4998.      TO3=(G1=(P017+P062+P02+P047+P032+2)+1)=G2
4999.      T1=(G1=(P018+P063+P03+P048+P033+2)+1)=G2
5000.      T2=(G1=(P020+P065+P05+P050+P035+2)+1)=G2
5001.      T3=(G1=(P021+P066+P06+P051+P08+P038+2)+1)=G2
5002.      RJ=(SG(IM1,JM1,K)=(T3+S+T2)+SG(I,JM1,K)=(T2+S+(G1=(P019+P064+P04+
5003.      P049+P034+2)+1)=G2)+SG(IM1,J,K)=(T1+S+T0)+SG(I,J,K)=(TO+S+(G1=(
5004.      P018+P061+P01+P046+P031+2)+1)=G2)+T3+T2+T1+TO)/4.0
5005.      TO4=(G1=(P017+P062+P02+P047+P032+2)+1)=G2
5006.      T1=(G1=(P018+P063+P03+P048+P033+2)+1)=G2
5007.      T2=(G1=(P020+P065+P05+P050+P035+2)+1)=G2
5008.      T3=(G1=(P021+P066+P06+P051+P08+P038+2)+1)=G2
5009.      RK=(SG(IM1,J,K)=(T3+S+T2)+SG(I,J,K)=(T2+S+(G1=(P052+P07+P022+
5010.      P087+P037+2)+1)=G2)+SG(IM1,J,K)=(T1+S+T0)+SG(I,J,K)=(TO+S+(G1=(
5011.      P018+P061+P01+P046+P031+2)+1)=G2)+T3+T2+T1+TO)/4.0
5012.      TO5=(G1=(P017+P062+P02+P047+P032+2)+1)=G2
5013.      T1=(G1=(P018+P063+P03+P048+P033+2)+1)=G2
5014.      T2=(G1=(P020+P065+P05+P050+P035+2)+1)=G2
5015.      T3=(G1=(P021+P066+P06+P051+P08+P038+2)+1)=G2

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5018. RJP:=[SG(IM1,JP1,K)=[T2+S+T2]+SG(I,JP1,K)=[T2+S+(G1=[P025+P070+P010
5017. *P055+P040+2)+1]==G2]+SG(IM1,J,K)=[T1+S+T0]+SG(I,J,K)=[T0+S+(G1=
5016. [P016+P061+P01+P046+P031+2)+1]==G2]+T3+T2+T1+T0)/4.0
5015. T0:=[G1=[P017+P062+P02+P047+P032+2)+1]==G2
5014. T1:=[G1=[P018+P063+P03+P048+P033+2)+1]==G2
5013. T2:=[G1=[P028+P074+P014+P058+P044+2)+1]==G2
5012. T3:=[G1=[P030+P076+P015+P060+P045+2)+1]==G2
5011. RJP:=[SG(IM1,J,K)=[T3+S+T2]+SG(I,J,K)=[T2+S+(G1=[P028+P073+P013
5010. *P058+P043+2)+1]==G2]+SG(IM1,J,K)=[T1+S+T0]+SG(I,J,K)=[T0+S+(G1=
5009. [P016+P061+P01+P046+P031+2)+1]==G2]+T3+T2+T1+T0)/4.0
5008.
5007. C
5006. C
5005. C XDI
5004. P01XD1 = QXINFXD1/XIXIP(J,I)
5003. P02XD1 = QXINFXD1/XIXIP(J,IM1)
5002. P03XD1 = QXINFXD1/XIXIP(J,IM2)
5001. P04XD1 = QXINFXD1/XIXIP(JM1,I)
5000. P05XD1 = QXINFXD1/XIXIP(JM1,IM1)
4999. P06XD1 = QXINFXD1/XIXIP(JM1,IM2)
4998. P07XD1 = QXINFXD1/XIXIP(J,I)
4997. P08XD1 = QXINFXD1/XIXIP(J,IM1)
4996. P09XD1 = QXINFXD1/XIXIP(J,IM2)
4995. P010XD1 = QXINFXD1/XIXIP(JP1,I)
4994. P011XD1 = QXINFXD1/XIXIP(JP1,IM1)
4993. P012XD1 = QXINFXD1/XIXIP(JP1,IM2)
4992. P013XD1 = QXINFXD1/XIXIP(J,I)
4991. P014XD1 = QXINFXD1/XIXIP(J,IM1)
4990. P015XD1 = QXINFXD1/XIXIP(J,IM2)
4989. P016XD1 = XIXIP(J,I)+QXINFXD1=S/XIXIP(J,I)
4988. P017XD1 = XIXIP(J,IM1)+QXINFXD1=S/XIXIP(J,IM1)
4987. P018XD1 = XIXIP(J,IM2)+QXINFXD1=S/XIXIP(J,IM2)
4986. P019XD1 = XIXIP(JM1,I)+QXINFXD1=S/XIXIP(JM1,I)
4985. P020XD1 = XIXIP(JM1,IM1)+QXINFXD1=S/XIXIP(JM1,IM1)
4984. P021XD1 = XIXIP(JM1,IM2)+QXINFXD1=S/XIXIP(JM1,IM2)
4983. P022XD1 = XIXIP(J,I)+QXINFXD1=S/XIXIP(J,I)
4982. P023XD1 = XIXIP(J,IM1)+QXINFXD1=S/XIXIP(J,IM1)
4981. P024XD1 = XIXIP(J,IM2)+QXINFXD1=S/XIXIP(J,IM2)
4980. P025XD1 = XIXIP(JP1,I)+QXINFXD1=S/XIXIP(JP1,I)
4979. P026XD1 = XIXIP(JP1,IM1)+QXINFXD1=S/XIXIP(JP1,IM1)
4978. P027XD1 = XIXIP(JP1,IM2)+QXINFXD1=S/XIXIP(JP1,IM2)
4977. P028XD1 = XIXIP(J,I)+QXINFXD1=S/XIXIP(J,I)
4976. P029XD1 = XIXIP(J,IM1)+QXINFXD1=S/XIXIP(J,IM1)
4975. P030XD1 = XIXIP(J,IM2)+QXINFXD1=S/XIXIP(J,IM2)
4974. P031XD1 = QZINFXD1
4973. P032XD1 = QZINFXD1
4972. P033XD1 = QZINFXD1
4971. P034XD1 = QZINFXD1
4970. P035XD1 = QZINFXD1
4969. P036XD1 = QZINFXD1
4968. P037XD1 = QZINFXD1
4967. P038XD1 = QZINFXD1
4966. P039XD1 = QZINFXD1
4965. P040XD1 = QZINFXD1
4964. P041XD1 = QZINFXD1
4963. P042XD1 = QZINFXD1
4962. P043XD1 = QZINFXD1
4961. P044XD1 = QZINFXD1
4960. P045XD1 = QZINFXD1
4959. P046XD1 = XIXIP(J,I)+2*QXINFXD1=S/XIXIP(J,I)+A11R(J,I)+QXINFXD1/
4958. XIXIP(J,I)
4957. P047XD1 = XIXIP(J,IM1)+2*QXINFXD1=S/XIXIP(J,IM1)+A11R(J,IM1)+
4956. QXINFXD1/XIXIP(J,IM1)
4955. P048XD1 = XIXIP(J,IM2)+2*QXINFXD1=S/XIXIP(J,IM2)+A11R(J,IM2)+
4954. QXINFXD1/XIXIP(J,IM2)
4953. P049XD1 = XIXIP(JM1,I)+2*QXINFXD1=S/XIXIP(JM1,I)+A11R(JM1,I)+
4952. QXINFXD1/XIXIP(JM1,I)
4951. P050XD1 = XIXIP(JM1,IM1)+2*QXINFXD1=S/XIXIP(JM1,IM1)+A11R(JM1,IM1)
4950. +QXINFXD1/XIXIP(JM1,IM1)
4949. P051XD1 = XIXIP(JM1,IM2)+2*QXINFXD1=S/XIXIP(JM1,IM2)+A11R(JM1,IM2)
4948. +QXINFXD1/XIXIP(JM1,IM2)
4947. P052XD1 = XIXIP(J,I)+2*QXINFXD1=S/XIXIP(J,I)+A11R(J,I)+QXINFXD1/
4946. XIXIP(J,I)
4945. P053XD1 = XIXIP(J,IM1)+2*QXINFXD1=S/XIXIP(J,IM1)+A11R(J,IM1)+
4944. QXINFXD1/XIXIP(J,IM1)
4943. P054XD1 = XIXIP(J,IM2)+2*QXINFXD1=S/XIXIP(J,IM2)+A11R(J,IM2)+
4942. QXINFXD1/XIXIP(J,IM2)
4941. P055XD1 = XIXIP(JP1,I)+2*QXINFXD1=S/XIXIP(JP1,I)+A11R(JP1,I)+
4940. QXINFXD1/XIXIP(JP1,I)
4939. P056XD1 = XIXIP(JP1,IM1)+2*QXINFXD1=S/XIXIP(JP1,IM1)+A11R(JP1,IM1)
4938. +QXINFXD1/XIXIP(JP1,IM1)
4937. P057XD1 = XIXIP(JP1,IM2)+2*QXINFXD1=S/XIXIP(JP1,IM2)+A11R(JP1,IM2)
4936. +QXINFXD1/XIXIP(JP1,IM2)
4935. P058XD1 = XIXIP(J,I)+2*QXINFXD1=S/XIXIP(J,I)+A11R(J,I)+QXINFXD1/
4934. XIXIP(J,I)
4933. P059XD1 = XIXIP(J,IM1)+2*QXINFXD1=S/XIXIP(J,IM1)+A11R(J,IM1)+
4932. QXINFXD1/XIXIP(J,IM1)
4931. P060XD1 = XIXIP(J,IM2)+2*QXINFXD1=S/XIXIP(J,IM2)+A11R(J,IM2)+
4930. QXINFXD1/XIXIP(J,IM2)
4929. P061XD1 = XIXIP(J,I)+QXINFXD1=S/XIXIP(J,I)+XIXIP(J,I)+QXINFXD1/
4928. XIXIP(J,I)
4927. P062XD1 = XIXIP(J,IM1)+QXINFXD1=S/XIXIP(J,IM1)+XIXIP(J,IM1)+
4926. QXINFXD1/XIXIP(J,IM1)
4925. P063XD1 = XIXIP(J,IM2)+QXINFXD1=S/XIXIP(J,IM2)+XIXIP(J,IM2)+
4924. QXINFXD1/XIXIP(J,IM2)
4923. P064XD1 = XIXIP(JM1,I)+QXINFXD1=S/XIXIP(JM1,I)+XIXIP(JM1,I)+
4922. QXINFXD1/XIXIP(JM1,I)
4921. P065XD1 = XIXIP(JM1,IM1)+QXINFXD1=S/XIXIP(JM1,IM1)+XIXIP(JM1,IM1)+
4920. QXINFXD1/XIXIP(JM1,IM1)
4919. P066XD1 = XIXIP(JM1,IM2)+QXINFXD1=S/XIXIP(JM1,IM2)+XIXIP(JM1,IM2)+
4918. QXINFXD1/XIXIP(JM1,IM2)
4917. P067XD1 = XIXIP(J,I)+QXINFXD1=S/XIXIP(J,I)+XIXIP(J,I)+QXINFXD1/
4916. XIXIP(J,I)
4915. P068XD1 = XIXIP(J,IM1)+QXINFXD1=S/XIXIP(J,IM1)+XIXIP(J,IM1)+
4914. QXINFXD1/XIXIP(J,IM1)
4913. P069XD1 = XIXIP(J,IM2)+QXINFXD1=S/XIXIP(J,IM2)+XIXIP(J,IM2)+
4912. QXINFXD1/XIXIP(J,IM2)
4911. P070XD1 = XIXIP(JP1,I)+QXINFXD1=S/XIXIP(JP1,I)+XIXIP(JP1,I)+
4910. QXINFXD1/XIXIP(JP1,I)
4909. P071XD1 = XIXIP(JP1,IM1)+QXINFXD1=S/XIXIP(JP1,IM1)+XIXIP(JP1,IM1)+
4908. QXINFXD1/XIXIP(JP1,IM1)
4907. P072XD1 = XIXIP(JP1,IM2)+QXINFXD1=S/XIXIP(JP1,IM2)+XIXIP(JP1,IM2)+
4906. QXINFXD1/XIXIP(JP1,IM2)
4905. P073XD1 = XIXIP(J,I)+QXINFXD1=S/XIXIP(J,I)+XIXIP(J,I)+QXINFXD1/
4904. XIXIP(J,I)
4903. P074XD1 = XIXIP(J,IM1)+QXINFXD1=S/XIXIP(J,IM1)+XIXIP(J,IM1)+
4902. QXINFXD1/XIXIP(J,IM1)
4901. P075XD1 = XIXIP(J,IM2)+QXINFXD1=S/XIXIP(J,IM2)+XIXIP(J,IM2)+
4900. QXINFXD1/XIXIP(J,IM2)
4899. T0=G2-1
4898. T1:=[G1=[P017+P062+P02+P047+P032+2)+1]==T0
4897. T2=P017+P062XD1+P017XD1+P062+P02+P047XD1+P02XD1+P047+2+P032+
4896. P032XD1
4895. RJPXD1=SG(IM1,J,K)=[G1=G2+T1+T2+S+G1+G2+G1=[P016+P061+P01+P046+P031
4894. +2)+1]==T0+{P018+P063XD1+P018XD1+P063+P03+P048XD1+P03XD1+P048+2+
4893. P03+P033XD1)+G1+G2+T1+T2
4892. T0=G2-1
4891. T1:=[G1=[P018+P063+P03+P048+P033+2)+1]==T0
4890. T2=P018+P063XD1+P018XD1+P063+P03+P048XD1+P03XD1+P048+2+P033+
4889. P033XD1
4888. RIMXD1=SG(IM1,J,K)=[G1=G2+T1+T2+S+G1+G2+G1=[P017+P062+P02+P047+
4887. P032+2)+1]==T0+{P017+P062XD1+P017XD1+P062+P02+P047XD1+P02XD1+
4886. P047+2+P032+P032XD1)+G1+G2+T1+T2

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5148. T0:=G2-1
5149. T1:=[G1:=[P017+P062+P02+P047+P032==2)+1]==T0
5150. T2:=P017+P062XD1+P017XD1+P062+P02+P047XD1+P02XD1+P047+2+P032+
5151. P032XD1
5152. T3:=G1+G2+T1+T2
5153. T4:=[G1:=[P018+P063+P03+P048+P033==2)+1]==T0
5154. T5:=P018+P063XD1+P018XD1+P063+P03+P048XD1+P03XD1+P048+2+P033+
5155. P033XD1
5156. T6:=[G1:=[P020+P065+P05+P050+P035==2)+1]==T0
5157. T7:=P020+P065XD1+P020XD1+P065+P050+P050XD1+P05+P050XD1+2+P035+
5158. P035XD1
5159. T8:=G1+G2+T6+T7
5160. T9:=[G1:=[P021+P066+P051+P06+P036==2)+1]==T0
5161. T10:=P051+P066XD1+P021+P066XD1+P021XD1+P066+P051XD1+P06+2+P036+
5162. P036XD1
5163. RKXD1:=[SG[IM1, JM1, K]:=[G1+G2+T9+T10+S+T8]+SG[I, JM1, K]:=[G1+G2+T8+T7+
5164. S+G1+G2+T9+T10+S+T8+P048+P048+P034==2)+1]==T0+([P019+P064XD1+
5165. P019XD1+P064+P048+P048XD1+P048+P048XD1+2+P034+P034XD1))+SG[IM1, J, K]
5166. +([G1+G2+T4+T5+S+T3]+SG[I, J, K]:=[G1+G2+T1+T2+S+G1+G2+T1+P018+P061
5167. +P01+P048+P031==2)+1]==T0+([P015+P061XD1+P018XD1+P061+P01+P048XD1+
5168. P01XD1+P048+2+P031+P031XD1))+G1+G2+T9+T10+T8+G1+G2+T4+T5+T3)/4.0
5169. T0:=G2-1
5170. T1:=[G1:=[P017+P062+P02+P047+P032==2)+1]==T0
5171. T2:=P017+P062XD1+P017XD1+P062+P02+P047XD1+P02XD1+P047+2+P032+
5172. P032XD1
5173. T3:=G1+G2+T1+T2
5174. T4:=[G1:=[P018+P063+P03+P048+P033==2)+1]==T0
5175. T5:=P018+P063XD1+P018XD1+P063+P03+P048XD1+P03XD1+P048+2+P033+
5176. P033XD1
5177. T6:=[G1:=[P053+P08+P023+P068+P038==2)+1]==T0
5178. T7:=P053+P08XD1+P053XD1+P08+P023+P068XD1+P023XD1+P068+2+P038+
5179. P038XD1
5180. T8:=G1+G2+T8+T7
5181. T9:=[G1:=[P054+P09+P024+P069+P039==2)+1]==T0
5182. T10:=P054+P09XD1+P054XD1+P09+P024+P069XD1+P024XD1+P069+2+P039+
5183. P039XD1
5184. RKXD1:=[SG[IM1, J, KM1]:=[G1+G2+T9+T10+S+T8]+SG[I, J, KM1]:=[G1+G2+T8+T7+
5185. S+G1+G2+T9+T10+S+T8+P072+P072+P022+P067+P037==2)+1]==T0+([P052+P07XD1+
5186. P052XD1+P07+P022+P067XD1+P022XD1+P067+2+P037+P037XD1))+SG[IM1, J, K]
5187. +([G1+G2+T4+T5+S+T3]+SG[I, J, K]:=[G1+G2+T1+T2+S+G1+G2+T1+P018+
5188. P051+P01+P048+P031==2)+1]==T0+([P016+P061XD1+P016XD1+P061+P01+
5189. P048XD1+P01XD1+P048+2+P031+P031XD1))+G1+G2+T9+T10+T8+G1+G2+T4+T5+
5190. T3)/4.0
5191. T0:=G2-1
5192. T1:=[G1:=[P017+P062+P02+P047+P032==2)+1]==T0
5193. T2:=P017+P062XD1+P017XD1+P062+P02+P047XD1+P02XD1+P047+2+P032+
5194. P032XD1
5195. T3:=G1+G2+T1+T2
5196. T4:=[G1:=[P018+P063+P03+P048+P033==2)+1]==T0
5197. T5:=P018+P063XD1+P018XD1+P063+P03+P048XD1+P03XD1+P048+2+P033+
5198. P033XD1
5199. T6:=[G1:=[P026+P071+P011+P056+P041==2)+1]==T0
5200. T7:=P026+P071XD1+P026XD1+P071+P011+P056XD1+P011XD1+P056+2+P041+
5201. P041XD1
5202. T8:=G1+G2+T8+T7
5203. T9:=[G1:=[P027+P072+P012+P057+P042==2)+1]==T0
5204. T10:=P027+P072XD1+P027XD1+P072+P012+P057XD1+P012XD1+P057+2+P042+
5205. P042XD1
5206. RKXD1:=[SG[IM1, JP1, K]:=[G1+G2+T9+T10+S+T8]+SG[I, JP1, K]:=[G1+G2+T8+T7+
5207. S+G1+G2+T9+T10+S+T8+P025+P070+P010+P055+P040==2)+1]==T0+([P025+P070XD1+
5208. P025XD1+P070+P025+P070XD1+P025XD1+P070+2+P040+P040XD1))+SG[IM1, J,
5209. K]:=[G1+G2+T4+T5+S+T3]+SG[I, J, K]:=[G1+G2+T1+T2+S+G1+G2+T1+P018+
5210. P061+P01+P048+P031==2)+1]==T0+([P016+P061XD1+P016XD1+P061+P01+
5211. P048XD1+P01XD1+P048+2+P031+P031XD1))+G1+G2+T9+T10+T8+G1+G2+T4+T5+
5212. T3)/4.0
5213. T0:=G2-1
5214. T1:=[G1:=[P017+P062+P02+P047+P032==2)+1]==T0
5215. T2:=P017+P062XD1+P017XD1+P062+P02+P047XD1+P02XD1+P047+2+P032+
5216. P032XD1
5217. T3:=G1+G2+T1+T2
5218. T4:=[G1:=[P018+P063+P03+P048+P033==2)+1]==T0
5219. T5:=P018+P063XD1+P018XD1+P063+P03+P048XD1+P03XD1+P048+2+P033+
5220. P033XD1
5221. T6:=[G1:=[P029+P074+P014+P059+P044==2)+1]==T0
5222. T7:=P029+P074XD1+P029XD1+P074+P014+P059XD1+P014XD1+P059+2+P044+
5223. P044XD1
5224. T8:=G1+G2+T8+T7
5225. T9:=[G1:=[P030+P075+P015+P060+P045==2)+1]==T0
5226. T10:=P030+P075XD1+P030XD1+P075+P015+P060XD1+P015XD1+P060+2+P045+
5227. P045XD1
5228. RKXD1:=[SG[IM1, J, KP1]:=[G1+G2+T9+T10+S+T8]+SG[I, J, KP1]:=[G1+G2+T8+T7+
5229. S+G1+G2+T9+T10+S+T8+P073+P013+P058+P043==2)+1]==T0+([P028+P073XD1+
5230. P028XD1+P073+P013+P058XD1+P013XD1+P058+2+P043+P043XD1))+SG[IM1, J,
5231. K]:=[G1+G2+T4+T5+S+T3]+SG[I, J, K]:=[G1+G2+T1+T2+S+G1+G2+T1+P018+
5232. P061+P01+P048+P031==2)+1]==T0+([P016+P061XD1+P016XD1+P061+P01+
5233. P048XD1+P01XD1+P048+2+P031+P031XD1))+G1+G2+T9+T10+T8+G1+G2+T4+T5+
5234. T3)/4.0
5235. T0:=1/DXIC(I)
5236. T1:=P88
5237. T2:=P87
5238. T3:=P83
5239. T4:=P82
5240. T5:=XIXXI(J, I)
5241. T6:=1/DZETAC(K)
5242. RESXD1:=[(P88-P83)=RKXD1+TA33M+2+T5+T6+QZINF+RKXD1+2+T5+T6+QZINFXD1
5243. +RK]:=V2+([T1+P113]=RKFXD1+TA33P+2+T5+T6+QZINF+RKFXD1+2+T5+T6+
5244. QZINFXD1+RK):=V1+S+RIMXD1+TA12M+([P83+P82+T1+T2)=TAJ2+P88+P87+
5245. T3+T4)=TAJ1+P88+T2)=RIMXD1+TA11M+2+T0+QZINF+RIMXD1+2+T0+
5246. QZINFXD1+RIM+RIPXD1+TA12P+([P84+P83+P89+T1)=TAJ2+P89+P88+P84+T3
5247. )=TAJ1)+S+RJD1+TA21M+([P89+T1+P84+T3)=TA12+P88+T2+P83+T4)=TA11
5248. )+P88+T3)=RJD1+TA22M+RJPXD1+TA21P+([P84+P83+P89+T1)=TA12+P83+
5249. P82+P88+T2)=TA11)+P83+T1)=RJPXD1+TA22P+P89+T1)=RIPXD1+TA11P+2+
5250. T0+QZINF+RIPXD1+2+T0+QZINFXD1+RIP
5251. C XD2
5252. P01XD2 = QZINFXD2/XIXIP(J, I)
5253. P02XD2 = QZINFXD2/XIXIP(J, IM1)
5254. P03XD2 = QZINFXD2/XIXIP(J, IM2)
5255. P04XD2 = QZINFXD2/XIXIP(JM1, I)
5256. P05XD2 = QZINFXD2/XIXIP(JM1, IM1)
5257. P06XD2 = QZINFXD2/XIXIP(JM1, IM2)
5258. P07XD2 = QZINFXD2/XIXIP(J, I)
5259. P08XD2 = QZINFXD2/XIXIP(J, IM1)
5260. P09XD2 = QZINFXD2/XIXIP(J, IM2)
5261. P010XD2 = QZINFXD2/XIXIP(JP1, I)
5262. P011XD2 = QZINFXD2/XIXIP(JP1, IM1)
5263. P012XD2 = QZINFXD2/XIXIP(JP1, IM2)
5264. P013XD2 = QZINFXD2/XIXIP(J, I)
5265. P014XD2 = QZINFXD2/XIXIP(J, IM1)
5266. P015XD2 = QZINFXD2/XIXIP(J, IM2)
5267. P016XD2 = XIXIP(J, I)+QZINFXD2=S/XIXIP(J, I)
5268. P017XD2 = XIXIP(J, IM1)+QZINFXD2=S/XIXIP(J, IM1)
5269. P018XD2 = XIXIP(J, IM2)+QZINFXD2=S/XIXIP(J, IM2)
5270. P019XD2 = XIXIP(JM1, I)+QZINFXD2=S/XIXIP(JM1, I)
5271. P020XD2 = XIXIP(JM1, IM1)+QZINFXD2=S/XIXIP(JM1, IM1)
5272. P021XD2 = XIXIP(JM1, IM2)+QZINFXD2=S/XIXIP(JM1, IM2)
5273. P022XD2 = XIXIP(J, I)+QZINFXD2=S/XIXIP(J, I)
5274. P023XD2 = XIXIP(J, IM1)+QZINFXD2=S/XIXIP(J, IM1)
5275. P024XD2 = XIXIP(J, IM2)+QZINFXD2=S/XIXIP(J, IM2)
5276. P025XD2 = XIXIP(JP1, I)+QZINFXD2=S/XIXIP(JP1, I)
5277. P026XD2 = XIXIP(JP1, IM1)+QZINFXD2=S/XIXIP(JP1, IM1)
5278. P027XD2 = XIXIP(JP1, IM2)+QZINFXD2=S/XIXIP(JP1, IM2)
5279. P028XD2 = XIXIP(J, I)+QZINFXD2=S/XIXIP(J, I)

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5412. P046X02+P01X02+P046+2+P031+P031X02+G1+G2+T9+T10+T8+G1+G2+T4+T5+
5413. T3/4.0
5414. TO+G2-1
5415. T1+G1+P017+P062+P02+P047+P032+2+1+T0
5416. T2+P017+P062X02+P017X02+P062+P02+P047X02+P02X02+P047+2+P032+
5417. P032X02
5418. T3+G1+G2+T1+T2
5419. T4+G1+P018+P063+P03+P048+P033+2+1+T0
5420. T5+P018+P063X02+P018X02+P063+P03+P048X02+P03X02+P048+2+P033+
5421. P033X02
5422. T6+G1+P028+P071+P011+P058+P041+2+1+T0
5423. T7+P028+P071X02+P028X02+P071+P011+P058X02+P011X02+P058+2+P041+
5424. P041X02
5425. T8+G1+G2+T8+T7
5426. T9+G1+P027+P072+P012+P057+P042+2+1+T0
5427. T10+P027+P072X02+P027X02+P072+P012+P057X02+P012X02+P057+2+P042+
5428. P042X02
5429. RJPX02+SG(IM1,JP1,K)=(G1+G2+T9+T10+5+T8)+SG(I,JP1,K)=(G1+G2+T8+T7
5430. +5+G1+G2+G1+P025+P070+P010+P055+P040+2+1+T0+P025+P070X02+
5431. P025X02+P070+P010+P055X02+P010X02+P055+2+P040+P040X02)+SG(IM1,J,
5432. K)=(G1+G2+T4+T8+5+T3)+SG(I,J,K)=(G1+G2+T1+T2+5+G1+G2+G1+P016+
5433. P061+P01+P048+P031+2+1+T0+P016+P061X02+P016X02+P061+P01+
5434. P048X02+P01X02+P048+2+P031+P031X02)+G1+G2+T9+T10+T8+G1+G2+T4+T5+
5435. T3/4.0
5436. TO+G2-1
5437. T1+G1+P017+P062+P02+P047+P032+2+1+T0
5438. T2+P017+P062X02+P017X02+P062+P02+P047X02+P02X02+P047+2+P032+
5439. P032X02
5440. T3+G1+G2+T1+T2
5441. T4+G1+P018+P063+P03+P048+P033+2+1+T0
5442. T5+P018+P063X02+P018X02+P063+P03+P048X02+P03X02+P048+2+P033+
5443. P033X02
5444. T6+G1+P029+P074+P014+P059+P044+2+1+T0
5445. T7+P029+P074X02+P029X02+P074+P014+P059X02+P014X02+P059+2+P044+
5446. P044X02
5447. T8+G1+G2+T8+T7
5448. T9+G1+P030+P075+P015+P060+P045+2+1+T0
5449. T10+P030+P075X02+P030X02+P075+P015+P060X02+P015X02+P060+2+P045+
5450. P045X02
5451. RKPX02+SG(IM1,J,KP1)=(G1+G2+T8+T10+5+T8)+SG(I,J,KP1)=(G1+G2+T8+T7
5452. +5+G1+G2+G1+P028+P073+P013+P056+P043+2+1+T0+P028+P073X02+
5453. P028X02+P073+P013+P056X02+P013X02+P056+2+P043+P043X02)+SG(IM1,J,
5454. K)=(G1+G2+T4+T8+5+T3)+SG(I,J,K)=(G1+G2+T1+T2+5+G1+G2+G1+P016+
5455. P061+P01+P048+P031+2+1+T0+P016+P061X02+P016X02+P061+P01+
5456. P048X02+P01X02+P048+2+P031+P031X02)+G1+G2+T9+T10+T8+G1+G2+T4+T5+
5457. T3/4.0
5458. TO+1/DXIC(I)
5459. T1+P88
5460. T2+P87
5461. T3+P83
5462. T4+P82
5463. T5+XIXI(J,I)
5464. T6+1/DZETAC(K)
5465. RESX02+((P88+P83)=RKPX02+TA33M+2+T5+T6+QZINF+RKPX02+2+T5+T6+QZINF+X02
5466. +RK)+V2+((T1+P113)=RKPX02+TA33P+2+T5+T6+QZINF+RKPX02+2+T5+T6+
5467. QZINF+X02+RK)+V1+5+((RIMX02+TA12M+((P83+P82+T1+T2)=TAJ2+(P88+P87+
5468. T3+T4)=TAJ1)+(P88+T2)=RIMX02+TA11M+2+TO+QXINF+RIMX02+2+TO+
5469. QXINF+X02+RIM)+RJPX02+TA12P+((P84+P83+P88+T1)=TAJ2+(P88+P88+P84+T3
5470. )=TAJ1)+5+((RJPX02+TA21M+((P89+T1+P84+T3)=TA12+((P88+T2+P83+T4)=TA11
5471. )=(P88+T3)=RJPX02+TA22M)+RJPX02+TA21P+((P84+P83+P88+T1)=TA12+((P83
5472. +P82+P88+T2)=TA11)+(P83+T1)=RJPX02+TA22P+(P89+T1)=RJPX02+TA11P+2+
5473. TO+QXINF+RJPX02+2+TO+QXINF+X02+RIP
5474.
5475. IF [K.EQ.KUP.AND.I.GE.ILE.AND.I.LE.ITE.AND.J.LE.JTPM1] THEN
5476.
5477. P
5478.
5479. C
5480. C
5481. C
5482. C
5483. C
5484. C
5485. C
5486. C
5487. C
5488. C
5489. C
5490. C
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5544 PA45 = QZINF+DC3*P162+DC3*P161+DC2*P137+DC2*P136+DC1*P112+DC1*
5545 P111)/2.0
5546 PA48 = A11R(J,I)=[DX11(I)=[P88+S*P89]+OXINF/XIXIP(J,I)]+XIVIP(J,I)
5547 = [XIVIP(J,I)+OXINF*S/XIXIP(J,I)+AJ2(J)=[P84+P83-P89-P88)+AJ1(J)
5548 = [P89+P86-P84-P83)]/2.0]
5549 PA47 = A11R(J,IM1)=[DX11(IM1)=[P87+S*P88]+OXINF/XIXIP(J,IM1)]+
5550 XIVIP(J,IM1)=[XIVIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+AJ2(J)=[P83+P82-
5551 P88-P87)+AJ1(J)=[P88+P87-P83-P82)]/2.0]
5552 PA48 = A11R(J,IM2)=[DX11(IM2)=[P86+S*P87]+OXINF/XIXIP(J,IM2)]+
5553 XIVIP(J,IM2)=[XIVIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+AJ2(J)=[P82+P81-
5554 P87-P86)+AJ1(J)=[P87+P86-P82-P81)]/2.0]
5555 PA58 = A11R(J,I)=[DX11(I)=[P113+S*P114]+OXINF/XIXIP(J,I)]+XIVIP(J,
5556 I)=[XIVIP(J,I)+OXINF*S/XIXIP(J,I)+AJ2(J)=[P118+P118-P114-P113)+
5557 AJ1(J)=[P114+P113-P109-P108)]/2.0]
5558 PA59 = A11R(J,IM1)=[DX11(IM1)=[P112+S*P113]+OXINF/XIXIP(J,IM1)]+
5559 XIVIP(J,IM1)=[XIVIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+AJ2(J)=[P118+
5560 P117-P113-P112)+AJ1(J)=[P113+P112-P108-P107)]/2.0]
5561 PA60 = A11R(J,IM2)=[DX11(IM2)=[P111+S*P112]+OXINF/XIXIP(J,IM2)]+
5562 XIVIP(J,IM2)=[XIVIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+AJ2(J)=[P117+
5563 P116-P112-P111)+AJ1(J)=[P112+P111-P107-P106)]/2.0]
5564 PA61 = XIVIP(J,I)=[DX11(I)=[P88+S*P89]+OXINF/XIXIP(J,I)]+XIVIP(J,I
5565 )=[OXINF*S/XIXIP(J,I)+AJ2(J)=[P84+P83-P89-P88)+AJ1(J)=[P89+P88-
5566 P84-P83)]/2.0]
5567 PA62 = XIVIP(J,IM1)=[DX11(IM1)=[P87+S*P88]+OXINF/XIXIP(J,IM1)]+
5568 XIVIP(J,IM1)=[OXINF*S/XIXIP(J,IM1)+AJ2(J)=[P83+P82-P88-P87)+AJ1(J
5569 )=[P88+P87-P83-P82)]/2.0]
5570 PA63 = XIVIP(J,IM2)=[DX11(IM2)=[P86+S*P87]+OXINF/XIXIP(J,IM2)]+
5571 XIVIP(J,IM2)=[OXINF*S/XIXIP(J,IM2)+AJ2(J)=[P82+P81-P87-P86)+AJ1(J
5572 )=[P87+P86-P82-P81)]/2.0]
5573 PA73 = XIVIP(J,I)=[DX11(I)=[P113+S*P114]+OXINF/XIXIP(J,I)]+XIVIP(J
5574 I)=[OXINF*S/XIXIP(J,I)+AJ2(J)=[P118+P118-P114-P113)+AJ1(J)=[P114
5575 +P113-P109-P108)]/2.0]
5576 PA74 = XIVIP(J,IM1)=[DX11(IM1)=[P112+S*P113]+OXINF/XIXIP(J,IM1)]+
5577 XIVIP(J,IM1)=[OXINF*S/XIXIP(J,IM1)+AJ2(J)=[P118+P117-P113-P112)+
5578 AJ1(J)=[P113+P112-P108-P107)]/2.0]
5579 PA75 = XIVIP(J,IM2)=[DX11(IM2)=[P111+S*P112]+OXINF/XIXIP(J,IM2)]+
5580 XIVIP(J,IM2)=[OXINF*S/XIXIP(J,IM2)+AJ2(J)=[P117+P116-P112-P111)+
5581 AJ1(J)=[P112+P111-P107-P106)]/2.0]
5582 C
5583 R1K, DPU
5584 C
5585 TO=[G1=[PA17+PA62+PA2=PA47+PA32**2)+1]**G2
5586 T1=[G1=[PA18+PA63+PA3=PA48+PA33**2)+1]**G2
5587 T2=[G1=[PA28+PA74+PA14+PA59+PA44**2)+1]**G2
5588 T3=[G1=[PA30+PA75+PA15+PA60+PA45**2)+1]**G2
5589 R1K=[S=[SG(IM1,J,KP1)=[T3+S*T2)+T3]+S=[SG(I,J,KP1)=[T2+S+[G1=[PA28
5590 +PA73+PA13=PA58+PA43**2)+1]**G2)+T2)+3]+[SG(IM1,J,K)=[T1+S*TO)+T1]
5591 +3]+[SG(I,J,K)=[TO+S+[G1=[PA18+PA61+PA1=PA46+PA31**2)+1]**G2)+TO]]
5592 /4.0
5593 DDPUD=DPUD(J,I)
5594 C
5595 DANOF11
5596 C
5597 C XD1
5598 PA1XD1 = OXINFXD1/XIXIP(J,I)
5599 PA2XD1 = OXINFXD1/XIXIP(J,IM1)
5600 PA3XD1 = OXINFXD1/XIXIP(J,IM2)
5601 PA13XD1 = OXINFXD1/XIXIP(J,I)
5602 PA14XD1 = OXINFXD1/XIXIP(J,IM1)
5603 PA15XD1 = OXINFXD1/XIXIP(J,IM2)
5604 PA16XD1 = XIVIP(J,I)=OXINFXD1*S/XIXIP(J,I)
5605 PA17XD1 = XIVIP(J,IM1)=OXINFXD1*S/XIXIP(J,IM1)
5606 PA18XD1 = XIVIP(J,IM2)=OXINFXD1*S/XIXIP(J,IM2)
5607 PA28XD1 = XIVIP(J,I)=OXINFXD1*S/XIXIP(J,I)
5608 PA29XD1 = XIVIP(J,IM1)=OXINFXD1*S/XIXIP(J,IM1)
5609 PA30XD1 = XIVIP(J,IM2)=OXINFXD1*S/XIXIP(J,IM2)
5610 PA31XD1 = QZINFXD1
5611 PA32XD1 = QZINFXD1
5612 PA33XD1 = QZINFXD1
5613 PA43XD1 = QZINFXD1
5614 PA44XD1 = QZINFXD1
5615 PA45XD1 = QZINFXD1
5616 PA46XD1 = XIVIP(J,I)**2=OXINFXD1*S/XIXIP(J,I)+A11R(J,I)=OXINFXD1/
5617 XIXIP(J,I)
5618 PA47XD1 = XIVIP(J,IM1)**2=OXINFXD1*S/XIXIP(J,IM1)+A11R(J,IM1)=
5619 OXINFXD1/XIXIP(J,IM1)
5620 PA48XD1 = XIVIP(J,IM2)**2=OXINFXD1*S/XIXIP(J,IM2)+A11R(J,IM2)=
5621 OXINFXD1/XIXIP(J,IM2)
5622 PA58XD1 = XIVIP(J,I)**2=OXINFXD1*S/XIXIP(J,I)+A11R(J,I)=OXINFXD1/
5623 XIXIP(J,I)
5624 PA59XD1 = XIVIP(J,IM1)**2=OXINFXD1*S/XIXIP(J,IM1)+A11R(J,IM1)=
5625 OXINFXD1/XIXIP(J,IM1)
5626 PA60XD1 = XIVIP(J,IM2)**2=OXINFXD1*S/XIXIP(J,IM2)+A11R(J,IM2)=
5627 OXINFXD1/XIXIP(J,IM2)
5628 PA61XD1 = XIVIP(J,I)=OXINFXD1*S/XIXIP(J,I)+XIVIP(J,I)=OXINFXD1/
5629 XIXIP(J,I)
5630 PA62XD1 = XIVIP(J,IM1)=OXINFXD1*S/XIXIP(J,IM1)+XIVIP(J,IM1)=
5631 OXINFXD1/XIXIP(J,IM1)
5632 PA63XD1 = XIVIP(J,IM2)=OXINFXD1*S/XIXIP(J,IM2)+XIVIP(J,IM2)=
5633 OXINFXD1/XIXIP(J,IM2)
5634 PA73XD1 = XIVIP(J,I)=OXINFXD1*S/XIXIP(J,I)+XIVIP(J,I)=OXINFXD1/
5635 XIXIP(J,I)
5636 PA74XD1 = XIVIP(J,IM1)=OXINFXD1*S/XIXIP(J,IM1)+XIVIP(J,IM1)=
5637 OXINFXD1/XIXIP(J,IM1)
5638 PA75XD1 = XIVIP(J,IM2)=OXINFXD1*S/XIXIP(J,IM2)+XIVIP(J,IM2)=
5639 OXINFXD1/XIXIP(J,IM2)
5640 TO=G2-1
5641 T1=[G1=[PA17+PA62+PA2=PA47+PA32**2)+1]**TO
5642 T2=PA17+PA62XD1+PA17XD1=PA62+PA2+PA47XD1+PA2XD1=PA47+2*PA32=
5643 PA32XD1
5644 T3=G1=G2=T1=T2
5645 T4=[G1=[PA18+PA63+PA3=PA48+PA33**2)+1]**TO
5646 T5=PA18+PA63XD1+PA18XD1=PA63+PA3+PA48XD1+PA3XD1=PA48+2*PA33=
5647 PA33XD1
5648 T6=[G1=[PA28+PA74+PA14+PA59+PA44**2)+1]**TO
5649 T7=PA28+PA74XD1+PA28XD1=PA74+PA14+PA59XD1+PA14XD1=PA59+2*PA44=
5650 PA44XD1
5651 T8=G1=G2=T6=T7
5652 T9=[G1=[PA30+PA75+PA15+PA60+PA45**2)+1]**TO
5653 T10=PA30+PA75XD1+PA30XD1=PA75+PA15+PA60XD1+PA15XD1=PA60+2*PA45=
5654 PA45XD1
5655 R1KXD1=[S=[SG(IM1,J,KP1)=[G1=G2=T9=T10+S*T8)+G1=G2=T9=T10]+S=[SG(I
5656 ,J,KP1)=[G1=G2=T8=T7+S*G1=G2=[G1=[PA28+PA73+PA13=PA58+PA43**2)+1]
5657 **TO=[PA28+PA73XD1+PA28XD1=PA73+PA13=PA58XD1+PA13XD1=PA58+2*PA43=
5658 PA43XD1)]+T8)+3]+[SG(IM1,J,K)=[G1=G2=T4=T5+S*T3)+G1=G2=T4=T5)+3]+[
5659 SG(I,J,K)=[G1=G2=T1=T2+S*G1=G2=[G1=[PA18+PA61+PA1=PA46+PA31**2)+1]
5660 **TO=[PA18+PA61XD1+PA18XD1=PA61+PA1=PA46XD1+PA1XD1=PA46+2*PA31=
5661 PA31XD1)]+T3)]/4.0
5662 DDPUXD1=DZETA(KLOW)=[-OXINFXD1+DDZXU=XIXX(J,I)=OXINFXD1]
5663 TO=XIXX(J,I)
5664 T1=1/DZETAC(K)
5665 AN1XD1=S=[DDPU=R1KXD1=TA33M+DDPUXD1=R1K=TA33M+2*TO=T1=OXINF=R1KXD1
5666 +2*TO=T1=OXINFXD1=R1K]
5667 C XD2
5668 PA1XD2 = OXINFXD2/XIXIP(J,I)
5669 PA2XD2 = OXINFXD2/XIXIP(J,IM1)
5670 PA3XD2 = OXINFXD2/XIXIP(J,IM2)
5671 PA13XD2 = OXINFXD2/XIXIP(J,I)
5672 PA14XD2 = OXINFXD2/XIXIP(J,IM1)
5673 PA15XD2 = OXINFXD2/XIXIP(J,IM2)
5674 PA16XD2 = XIVIP(J,I)=OXINFXD2*S/XIXIP(J,I)
5675 PA17XD2 = XIVIP(J,IM1)=OXINFXD2*S/XIXIP(J,IM1)
5676 PA18XD2 = XIVIP(J,IM2)=OXINFXD2*S/XIXIP(J,IM2)

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5675. PA28XD2 = XIYIP(J,I)=OXINFXD2+S/XIYIP(J,I)
5677. PA28XD2 = XIYIP(J,IM1)=OXINFXD2+S/XIYIP(J,IM1)
5678. PA30XD2 = XIYIP(J,IM2)=OXINFXD2+S/XIYIP(J,IM2)
5679. PA31XD2 = OZINFXD2
5680. PA32XD2 = OZINFXD2
5681. PA33XD2 = OZINFXD2
5682. PA43XD2 = OZINFXD2
5683. PA44XD2 = OZINFXD2
5684. PA45XD2 = OZINFXD2
5685. PA48XD2 = XIYIP(J,I)**2=OXINFXD2+S/XIYIP(J,I)+A11R(J,I)=OXINFXD2/
5686. XIYIP(J,I)
5687. PA47XD2 = XIYIP(J,IM1)**2=OXINFXD2+S/XIYIP(J,IM1)+A11R(J,IM1)=
5688. OXINFXD2/XIYIP(J,IM1)
5689. PA48XD2 = XIYIP(J,IM2)**2=OXINFXD2+S/XIYIP(J,IM2)+A11R(J,IM2)=
5690. OXINFXD2/XIYIP(J,IM2)
5691. PA58XD2 = XIYIP(J,I)**2=OXINFXD2+S/XIYIP(J,I)+A11R(J,I)=OXINFXD2/
5692. XIYIP(J,I)
5693. PA59XD2 = XIYIP(J,IM1)**2=OXINFXD2+S/XIYIP(J,IM1)+A11R(J,IM1)=
5694. OXINFXD2/XIYIP(J,IM1)
5695. PA60XD2 = XIYIP(J,IM2)**2=OXINFXD2+S/XIYIP(J,IM2)+A11R(J,IM2)=
5696. OXINFXD2/XIYIP(J,IM2)
5697. PA61XD2 = XIYIP(J,I)=OXINFXD2+S/XIYIP(J,I)+XIYIP(J,I)=OXINFXD2/
5698. XIYIP(J,I)
5699. PA62XD2 = XIYIP(J,IM1)=OXINFXD2+S/XIYIP(J,IM1)+XIYIP(J,IM1)=
5700. OXINFXD2/XIYIP(J,IM1)
5701. PA63XD2 = XIYIP(J,IM2)=OXINFXD2+S/XIYIP(J,IM2)+XIYIP(J,IM2)=
5702. OXINFXD2/XIYIP(J,IM2)
5703. PA73XD2 = XIYIP(J,I)=OXINFXD2+S/XIYIP(J,I)+XIYIP(J,I)=OXINFXD2/
5704. XIYIP(J,I)
5705. PA74XD2 = XIYIP(J,IM1)=OXINFXD2+S/XIYIP(J,IM1)+XIYIP(J,IM1)=
5706. OXINFXD2/XIYIP(J,IM1)
5707. PA75XD2 = XIYIP(J,IM2)=OXINFXD2+S/XIYIP(J,IM2)+XIYIP(J,IM2)=
5708. OXINFXD2/XIYIP(J,IM2)
5709. T0=C2-1
5710. T1=(C1*(PA17+PA62+PA2+PA47+PA32**2)+1)**TO
5711. T2=PA17+PA62XD2+PA17XD2+PA62+PA2+PA47XD2+PA2XD2+PA47+2+PA32+
5712. PA32XD2
5713. T3=G1+C2+T1+T2
5714. T4=(G1*(PA18+PA63+PA3+PA48+PA33**2)+1)**TO
5715. T5=PA18+PA63XD2+PA18XD2+PA63+PA3+PA48XD2+PA3XD2+PA48+2+PA33+
5716. PA33XD2
5717. T6=(C1*(PA29+PA74+PA14+PA58+PA44**2)+1)**TO
5718. T7=PA29+PA74XD2+PA29XD2+PA74+PA14+PA58XD2+PA14XD2+PA58+2+PA44+
5719. PA44XD2
5720. T8=G1+C2+T6+T7
5721. T9=(C1*(PA30+PA75+PA15+PA60+PA45**2)+1)**TO
5722. T10=PA30+PA75XD2+PA30XD2+PA75+PA15+PA60XD2+PA15XD2+PA60+2+PA45+
5723. PA45XD2
5724. R1KXD2=(S*(SG(IM1,J,KP1))=(G1+C2+T8+T10+S+T8)+G1+C2+T8+T10)+S*(SG(I
5725. J,KP1))=(G1+C2+T8+T7+S+G1+C2+G1*(PA28+PA73+PA13+PA58+PA43**2)+1)
5726. **TO*(PA28+PA73XD2+PA28XD2+PA73+PA13+PA58XD2+PA13XD2+PA58+2+PA43+
5727. PA43XD2))+T8)+3*(SG(IM1,J,K)=(G1+C2+T4+T5+S+T3)+G1+C2+T4+T5)+3*(
5728. SG(I,J,K)=(G1+C2+T1+T2+S+G1+C2+G1*(PA18+PA61+PA1+PA48+PA31**2)+1
5729. ))**TO*(PA18+PA61XD2+PA18XD2+PA61+PA1+PA48XD2+PA1XD2+PA48+2+PA31+
5730. PA31XD2))+T3))/4.0
5731. DDPUXD2=DZETA(KLOW)=(-OZINFXD2-DDZXU=XIXX(J,I)=OXINFXD2)
5732. TO=XIXX(J,I)
5733. T1=1/DZETAC(K)
5734. AN1XD2=S*(DDPU=R1KXD2+TA33M+DDPUXD2=R1K+TA33M+2=TO+T1=OZINF=R1KXD2
5735. +2=TO+T1=OZINFXD2=R1K)
5736. C X03
5737. TO=XIYX(J,I)
5738. T1=CC3=P138
5739. T2=CC1=P88
5740. T3=CC2=P113=S
5741. T4=S*(T3+T2+T1)
5742. T5=(T4+CC2+P114+S+CC1=P89+CC3=P139)=TA12+(S*(CC2+P112=S+CC1=P87+
5743. CC3=P137)+T3+T2+T1)+TA11
5744. T6=(S*(CC2+P108=S+CC1=P83+CC3=P133)+T3+T2+T1)+TAJ1
5745. T7=(T4+CC2+P118=S+CC1=P93+CC3=P143)=TAJ2
5746. T8=XIXX(J,I)
5747. DDPUXD3=DZETA(KLOW)=(DDZXUD3=(TO*(T7+T8)+(TO**2+T8**2)=T5+T8+
5748. OXINF)+DDZYUD3=(T7+T8+TO+T5))
5749. AN1XD3=DDPUXD3=R1K+S+TA33M
5750. C X04
5751. TO=XIYX(J,I)
5752. T1=CC3=P138
5753. T2=CC1=P88
5754. T3=CC2=P113=S
5755. T4=S*(T3+T2+T1)
5756. T5=(T4+CC2+P114+S+CC1=P89+CC3=P139)=TA12+(S*(CC2+P112=S+CC1=P87+
5757. CC3=P137)+T3+T2+T1)+TA11
5758. T6=(S*(CC2+P108=S+CC1=P83+CC3=P133)+T3+T2+T1)+TAJ1
5759. T7=(T4+CC2+P118=S+CC1=P93+CC3=P143)=TAJ2
5760. T8=XIXX(J,I)
5761. DDPUXD4=DZETA(KLOW)=(DDZXUD4=(TO*(T7+T8)+(TO**2+T8**2)=T5+T8+
5762. OXINF)+DDZYUD4=(T7+T8+TO+T5))
5763. AN1XD4=DDPUXD4=R1K+S+TA33M
5764. C X05
5765. TO=XIYX(J,I)
5766. T1=CC3=P138
5767. T2=CC1=P88
5768. T3=CC2=P113=S
5769. T4=S*(T3+T2+T1)
5770. T5=(T4+CC2+P114+S+CC1=P89+CC3=P139)=TA12+(S*(CC2+P112=S+CC1=P87+
5771. CC3=P137)+T3+T2+T1)+TA11
5772. T6=(S*(CC2+P108=S+CC1=P83+CC3=P133)+T3+T2+T1)+TAJ1
5773. T7=(T4+CC2+P118=S+CC1=P93+CC3=P143)=TAJ2
5774. T8=XIXX(J,I)
5775. DDPUXD5=DZETA(KLOW)=(DDZXUD5=(TO*(T7+T8)+(TO**2+T8**2)=T5+T8+
5776. OXINF)+DDZYUD5=(T7+T8+TO+T5))
5777. AN1XD5=DDPUXD5=R1K+S+TA33M
5778. C
5779. ENDIF
5780. C
5781. IF (K.EQ.KLOW.AND.I.GE.ILE.AND.I.LE.ITE.AND.J.LE.JTPM1) THEN
5782. C
5783. C
5784. C
5785. P11 = P(J,K-3,IM2)
5786. P12 = P(J,K-3,IM1)
5787. P13 = P(J,K-3,I)
5788. P14 = P(J,K-3,IP1)
5789. P33 = P(JM1,KM2,I)
5790. P36 = P(J,KM2,IM2)
5791. P37 = P(J,KM2,IM1)
5792. P38 = P(J,KM2,I)
5793. P39 = P(J,KM2,IP1)
5794. P43 = P(JP1,KM2,I)
5795. P56 = P(JM1,KM1,IM2)
5796. P57 = P(JM1,KM1,IM1)
5797. P58 = P(JM1,KM1,I)
5798. P59 = P(JM1,KM1,IP1)
5799. P61 = P(J,KM1,IM2)
5800. P62 = P(J,KM1,IM1)
5801. P63 = P(J,KM1,I)
5802. P64 = P(J,KM1,IP1)
5803. P66 = P(JP1,KM1,IM2)
5804. P67 = P(JP1,KM1,IM1)
5805. P68 = P(JP1,KM1,I)
5806. P69 = P(JP1,KM1,IP1)
5807. P61 = P(JM1,K,IM2)

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5808. P82 = P(JM1,K,IM1)
5809. P83 = P(JM1,K,1)
5810. P84 = P(JM1,K,IP1)
5811. P85 = P(J,K,IM2)
5812. P87 = P(J,K,IM1)
5813. P88 = P(J,K,1)
5814. P89 = P(J,K,IP1)
5815. P91 = P(JP1,K,IM2)
5816. P92 = P(JP1,K,IM1)
5817. P93 = P(JP1,K,1)
5818. P94 = P(JP1,K,IP1)
5819.
5820. C
5821. C
5822. C
5823. P81 = DXII(1) = (P88+S+P89)*OXINF/XIXIP(J,1)
5824. P82 = DXII(IM1) = (P87+S+P88)*OXINF/XIXIP(J,IM1)
5825. P83 = DXII(IM2) = (P88+S+P87)*OXINF/XIXIP(J,IM2)
5826. P87 = DXII(1) = (P83+S+P84)*OXINF/XIXIP(J,1)
5827. P88 = DXII(IM1) = (P82+S+P83)*OXINF/XIXIP(J,IM1)
5828. P89 = DXII(IM2) = (P81+S+P82)*OXINF/XIXIP(J,IM2)
5829. P816 = XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P94+P93-P89-P88)+AJ1
5830. (J) = (P89+P88-P84-P83))/2.0
5831. P817 = XIXIP(J,IM1) = OXINF/S/XIXIP(J,IM1) + (AJ2(J) = (P93+P92-P88-P87)
5832. +AJ1(J) = (P88+P87-P83-P82))/2.0
5833. P818 = XIXIP(J,IM2) = OXINF/S/XIXIP(J,IM2) + (AJ2(J) = (P92+P91-P87-P86)
5834. +AJ1(J) = (P87+P86-P82-P81))/2.0
5835. P822 = XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P89+P88-P84-P83)+AJ1
5836. (J) = (P84+P83-P89-P88))/2.0
5837. P823 = XIXIP(J,IM1) = OXINF/S/XIXIP(J,IM1) + (AJ2(J) = (P88+P87-P83-P82)
5838. +AJ1(J) = (P83+P82-P88-P87))/2.0
5839. P824 = XIXIP(J,IM2) = OXINF/S/XIXIP(J,IM2) + (AJ2(J) = (P87+P86-P82-P81)
5840. +AJ1(J) = (P82+P81-P87-P86))/2.0
5841. P831 = OZINF = (DC4+P89+OC4+P88+DC5+P84+DC5+P83+DC6+P38+DC8+P36))/2.0
5842. P832 = OZINF = (DC4+P88+OC4+P87+DC5+P83+DC5+P82+DC6+P38+DC8+P37))/2.0
5843. P833 = OZINF = (DC4+P87+OC4+P88+DC5+P82+DC5+P81+DC6+P37+DC8+P36))/2.0
5844. P837 = OZINF = (DC4+P84+DC4+P83+DC5+P39+DC5+P38+DC6+P14+DC6+P12))/2.0
5845. P838 = OZINF = (DC4+P83+DC4+P82+DC5+P34+DC5+P37+DC6+P13+DC6+P12))/2.0
5846. P839 = OZINF = (DC4+P82+DC4+P81+DC5+P37+DC5+P36+P12+DC6+P11))/2.0
5847. P848 = A11R(J,1) = (DXII(1) = (P88+S+P89)*OXINF/XIXIP(J,1) + XIXIP(J,1)
5848. - (XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P94+P93-P89-P88)+AJ1(J) =
5849. (P89+P88-P84-P83))/2.0)
5850. P847 = A11R(J,IM1) = (DXII(IM1) = (P87+S+P88)*OXINF/XIXIP(J,IM1) +
5851. XIXIP(J,IM1) = OXINF/S/XIXIP(J,IM1) + (AJ2(J) = (P93+P92-P88-P87)-
5852. P88-P87)+AJ1(J) = (P88+P87-P83-P82))/2.0)
5853. P848 = A11R(J,IM2) = (DXII(IM2) = (P88+S+P87)*OXINF/XIXIP(J,IM2) +
5854. XIXIP(J,IM2) = OXINF/S/XIXIP(J,IM2) + (AJ2(J) = (P92+P91-P87-P86)-
5855. P87-P86)+AJ1(J) = (P87+P86-P82-P81))/2.0)
5856. P852 = A11R(J,1) = (DXII(1) = (P83+S+P84)*OXINF/XIXIP(J,1) + XIXIP(J,1)
5857. - (XIXIP(J,1) = OXINF/S/XIXIP(J,1) + (AJ2(J) = (P89+P88-P84-P83)+AJ1(J) =
5858. (P84+P83-P89-P88))/2.0)
5859. P853 = A11R(J,IM1) = (DXII(IM1) = (P82+S+P83)*OXINF/XIXIP(J,IM1) +
5860. XIXIP(J,IM1) = OXINF/S/XIXIP(J,IM1) + (AJ2(J) = (P88+P87-P83-P82)+AJ1(J) =
5861. (P83+P82-P88-P87))/2.0)
5862. P854 = A11R(J,IM2) = (DXII(IM2) = (P81+S+P82)*OXINF/XIXIP(J,IM2) +
5863. XIXIP(J,IM2) = OXINF/S/XIXIP(J,IM2) + (AJ2(J) = (P87+P86-P82-P81)+AJ1(J) =
5864. (P82+P81-P87-P86))/2.0)
5865. P861 = XIXIP(J,1) = (DXII(1) = (P88+S+P89)*OXINF/XIXIP(J,1) + XIXIP(J,1)
5866. - OXINF/S/XIXIP(J,1) + (AJ2(J) = (P94+P93-P89-P88)+AJ1(J) = (P89+P88-
5867. P84-P83))/2.0)
5868. P862 = XIXIP(J,IM1) = (DXII(IM1) = (P87+S+P88)*OXINF/XIXIP(J,IM1) +
5869. XIXIP(J,IM1) = OXINF/S/XIXIP(J,IM1) + (AJ2(J) = (P93+P92-P88-P87)+AJ1(J)
5870. = (P88+P87-P83-P82))/2.0)
5871. P863 = XIXIP(J,IM2) = (DXII(IM2) = (P88+S+P87)*OXINF/XIXIP(J,IM2) +
5872. XIXIP(J,IM2) = OXINF/S/XIXIP(J,IM2) + (AJ2(J) = (P92+P91-P87-P86)+AJ1(J)
5873. = (P87+P86-P82-P81))/2.0)
5874. P867 = XIXIP(J,1) = (DXII(1) = (P83+S+P84)*OXINF/XIXIP(J,1) + XIXIP(J,1)
5875. - OXINF/S/XIXIP(J,1) + (AJ2(J) = (P89+P88-P84-P83)+AJ1(J) = (P84+P83-
5876. P89-P88))/2.0)
5877. P868 = XIXIP(J,IM1) = (DXII(IM1) = (P82+S+P83)*OXINF/XIXIP(J,IM1) +
5878. XIXIP(J,IM1) = OXINF/S/XIXIP(J,IM1) + (AJ2(J) = (P88+P87-P83-P82)+AJ1(J)
5879. = (P83+P82-P88-P87))/2.0)
5880. P869 = XIXIP(J,IM2) = (DXII(IM2) = (P81+S+P82)*OXINF/XIXIP(J,IM2) +
5881. XIXIP(J,IM2) = OXINF/S/XIXIP(J,IM2) + (AJ2(J) = (P87+P86-P82-P81)+AJ1(J)
5882. = (P82+P81-P87-P86))/2.0)
5883. C
5884. C
5885. C
5886. R1KU,DPL0
5887. TO = (G1 = (P817+P862-P82+P847+P832==2)+1) == G2
5888. T1 = (G1 = (P818+P863-P83+P848+P833==2)+1) == G2
5889. T2 = (G1 = (P853+P88+P823+P886+P836==2)+1) == G2
5890. T3 = (G1 = (P854+P89+P824+P889+P839==2)+1) == G2
5891. R1KU(S = (SG(IM1,J,KM1) = (T3+S+T2)+T3)+S = (SG(1,J,KM1) = (T2+S+G1 = (
5892. P852+P87+P822+P867+P837==2)+1) == G2)+T2)+3 = (SG(IM1,J,K) = (T1+S+TO)+
5893. T1)+3 = (SG(1,J,K) = (TO+S+(G1 = (P816+P861+P81+P846+P831==2)+1) == G2)+
5894. TO))/4.0
5895. DDPL = DPL0(J,1)
5896. C
5897. C
5898. C
5899. DANOFI2
5900. C
5901. C
5902. C
5903. P81XD1 = OXINF/D1/XIXIP(J,1)
5904. P82XD1 = OXINF/D1/XIXIP(J,IM1)
5905. P83XD1 = OXINF/D1/XIXIP(J,IM2)
5906. P87XD1 = OXINF/D1/XIXIP(J,1)
5907. P88XD1 = OXINF/D1/XIXIP(J,IM1)
5908. P89XD1 = OXINF/D1/XIXIP(J,IM2)
5909. P816XD1 = XIXIP(J,1) = OXINF/D1*S/XIXIP(J,1)
5910. P817XD1 = XIXIP(J,IM1) = OXINF/D1*S/XIXIP(J,IM1)
5911. P818XD1 = XIXIP(J,IM2) = OXINF/D1*S/XIXIP(J,IM2)
5912. P822XD1 = XIXIP(J,1) = OXINF/D1*S/XIXIP(J,1)
5913. P823XD1 = XIXIP(J,IM1) = OXINF/D1*S/XIXIP(J,IM1)
5914. P824XD1 = XIXIP(J,IM2) = OXINF/D1*S/XIXIP(J,IM2)
5915. P831XD1 = OZINF/D1
5916. P832XD1 = OZINF/D1
5917. P833XD1 = OZINF/D1
5918. P837XD1 = OZINF/D1
5919. P838XD1 = OZINF/D1
5920. P839XD1 = OZINF/D1
5921. P848XD1 = XIXIP(J,1) == 2*OXINF/D1*S/XIXIP(J,1) + A11R(J,1) = OXINF/D1/
5922. XIXIP(J,1)
5923. P847XD1 = XIXIP(J,IM1) == 2*OXINF/D1*S/XIXIP(J,IM1) + A11R(J,IM1) =
5924. OXINF/D1/XIXIP(J,IM1)
5925. P848XD1 = XIXIP(J,IM2) == 2*OXINF/D1*S/XIXIP(J,IM2) + A11R(J,IM2) =
5926. OXINF/D1/XIXIP(J,IM2)
5927. P852XD1 = XIXIP(J,1) == 2*OXINF/D1*S/XIXIP(J,1) + A11R(J,1) = OXINF/D1/
5928. XIXIP(J,1)
5929. P853XD1 = XIXIP(J,IM1) == 2*OXINF/D1*S/XIXIP(J,IM1) + A11R(J,IM1) =
5930. OXINF/D1/XIXIP(J,IM1)
5931. P854XD1 = XIXIP(J,IM2) == 2*OXINF/D1*S/XIXIP(J,IM2) + A11R(J,IM2) =
5932. OXINF/D1/XIXIP(J,IM2)
5933. P867XD1 = XIXIP(J,1) = OXINF/D1*S/XIXIP(J,1) + XIXIP(J,1) = OXINF/D1/
5934. XIXIP(J,1)
5935. P868XD1 = XIXIP(J,IM1) = OXINF/D1*S/XIXIP(J,IM1) + XIXIP(J,IM1) =
5936. OXINF/D1/XIXIP(J,IM1)
5937. P869XD1 = XIXIP(J,IM2) = OXINF/D1*S/XIXIP(J,IM2) + XIXIP(J,IM2) =
5938. OXINF/D1/XIXIP(J,IM2)
5939. TO = G2-1

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5940. T1=(G1*(P817+P862+P82+P847+P832**2)+1)**=T0
5941. T2=(P817+P862X01+P817X01+P862+P82+P847X01+P82X01+P847+2+P832=
5942. P832X01
5943. T3=G1+G2+T1+T2
5944. T4=(G1*(P818+P863+P83+P848+P833**2)+1)**=T0
5945. T5=(P818+P863X01+P818X01+P863+P83+P848X01+P83X01+P848+2+P833=
5946. P833X01
5947. T6=(G1*(P853+P88+P823+P868+P838**2)+1)**=T0
5948. T7=(P853+P88X01+P853X01+P88+P823+P868X01+P823X01+P868+2+P838=
5949. P838X01
5950. T8=G1+G2+T8+T7
5951. T9=(G1*(P854+P89+P824+P869+P839**2)+1)**=T0
5952. T10=(P854+P89X01+P854X01+P89+P824+P869X01+P824X01+P869+2+P839=
5953. P839X01
5954. R1KUXD1=(S*(SG(IM1,J,KM1)*(G1+G2+T9+T10+S+T8)+G1+G2+T9+T10)+S*(SG(
5955. 1,J,KM1)*(G1+G2+T6+T7+S+G1+G2*(G1*(P852+P87+P822+P867+P837**2)+1)
5956. **=T0*(P852+P87X01+P852X01+P87+P822+P867X01+P822X01+P867+2+P837=
5957. P837X01))+T8)+3*(SG(IM1,J,K)*(G1+G2+T4+T5+S+T3)+G1+G2+T4+T5)+3*(
5958. SG(I,J,K)*(G1+G2+T1+T2+S+G1+G2*(G1*(P816+P861+P81+P846+P831**2)+1)
5959. ))**=T0*(P816+P861X01+P816X01+P861+P81+P846X01+P81X01+P846+2+P831=
5960. P831X01))+T3))/4.0
5961. DDPLX01=DZETA(KLOW)*(-QZINF01+DDZXL=XIXX(J,I)=QXINF01)
5962. TO=XIXX1(J,I)
5963. T1=1/DZETAC(K)
5964. AN2XD1=DDPL=R1KUXD1+TA33P+DDPLX01=R1KU+TA33P+2*TO=T1=QZINF=R1KUXD1
5965. +2*TO=T1=QZINF01=R1KU
5966.
5967. C XD2
5968. P81X02 = QXINF02/XIXIP(J,I)
5969. P82X02 = QXINF02/XIXIP(J,IM1)
5970. P83X02 = QXINF02/XIXIP(J,IM2)
5971. P87X02 = QXINF02/XIXIP(J,I)
5972. P88X02 = QXINF02/XIXIP(J,IM1)
5973. P89X02 = QXINF02/XIXIP(J,IM2)
5974. P816X02 = XIYIP(J,I)=QXINF02=S/XIXIP(J,I)
5975. P817X02 = XIYIP(J,IM1)=QXINF02=S/XIXIP(J,IM1)
5976. P818X02 = XIYIP(J,IM2)=QXINF02=S/XIXIP(J,IM2)
5977. P822X02 = XIYIP(J,I)=QXINF02=S/XIXIP(J,I)
5978. P823X02 = XIYIP(J,IM1)=QXINF02=S/XIXIP(J,IM1)
5979. P824X02 = XIYIP(J,IM2)=QXINF02=S/XIXIP(J,IM2)
5980. P831X02 = QZINF02
5981. P832X02 = QZINF02
5982. P833X02 = QZINF02
5983. P837X02 = QZINF02
5984. P838X02 = QZINF02
5985. P839X02 = QZINF02
5986. P848X02 = XIYIP(J,I)**=2*QXINF02=S/XIXIP(J,I)+A11R(J,I)=QXINF02/
5987. XIXIP(J,I)
5988. P847X02 = XIYIP(J,IM1)**=2*QXINF02=S/XIXIP(J,IM1)+A11R(J,IM1)=
5989. QXINF02/XIXIP(J,IM1)
5990. P848X02 = XIYIP(J,IM2)**=2*QXINF02=S/XIXIP(J,IM2)+A11R(J,IM2)=
5991. QXINF02/XIXIP(J,IM2)
5992. P852X02 = XIYIP(J,I)**=2*QXINF02=S/XIXIP(J,I)+A11R(J,I)=QXINF02/
5993. XIXIP(J,I)
5994. P853X02 = XIYIP(J,IM1)**=2*QXINF02=S/XIXIP(J,IM1)+A11R(J,IM1)=
5995. QXINF02/XIXIP(J,IM1)
5996. P854X02 = XIYIP(J,IM2)**=2*QXINF02=S/XIXIP(J,IM2)+A11R(J,IM2)=
5997. QXINF02/XIXIP(J,IM2)
5998. P861X02 = XIYIP(J,I)=QXINF02=S/XIXIP(J,I)+XIYIP(J,I)=QXINF02/
5999. XIXIP(J,I)
6000. P862X02 = XIYIP(J,IM1)=QXINF02=S/XIXIP(J,IM1)+XIYIP(J,IM1)=
6001. QXINF02/XIXIP(J,IM1)
6002. P863X02 = XIYIP(J,IM2)=QXINF02=S/XIXIP(J,IM2)+XIYIP(J,IM2)=
6003. QXINF02/XIXIP(J,IM2)
6004. P867X02 = XIYIP(J,I)=QXINF02=S/XIXIP(J,I)+XIYIP(J,I)=QXINF02/
6005. XIXIP(J,I)
6006. P868X02 = XIYIP(J,IM1)=QXINF02=S/XIXIP(J,IM1)+XIYIP(J,IM1)=
6007. QXINF02/XIXIP(J,IM1)
6008. P869X02 = XIYIP(J,IM2)=QXINF02=S/XIXIP(J,IM2)+XIYIP(J,IM2)=
6009. QXINF02/XIXIP(J,IM2)
6010. TO=G2-1
6011. T1=(G1*(P817+P862+P82+P847+P832**2)+1)**=T0
6012. T2=(P817+P862X02+P817X02+P862+P82+P847X02+P82X02+P847+2+P832=
6013. P832X02
6014. T3=G1+G2+T1+T2
6015. T4=(G1*(P818+P863+P83+P848+P833**2)+1)**=T0
6016. T5=(P818+P863X02+P818X02+P863+P83+P848X02+P83X02+P848+2+P833=
6017. P833X02
6018. T6=(G1*(P853+P88+P823+P868+P838**2)+1)**=T0
6019. T7=(P853+P88X02+P853X02+P88+P823+P868X02+P823X02+P868+2+P838=
6020. P838X02
6021. T8=G1+G2+T8+T7
6022. T9=(G1*(P854+P89+P824+P869+P839**2)+1)**=T0
6023. T10=(P854+P89X02+P854X02+P89+P824+P869X02+P824X02+P869+2+P839=
6024. P839X02
6025. R1KUXD2=(S*(SG(IM1,J,KM1)*(G1+G2+T9+T10+S+T8)+G1+G2+T9+T10)+S*(SG(
6026. 1,J,KM1)*(G1+G2+T6+T7+S+G1+G2*(G1*(P852+P87+P822+P867+P837**2)+1)
6027. **=T0*(P852+P87X02+P852X02+P87+P822+P867X02+P822X02+P867+2+P837=
6028. P837X02))+T8)+3*(SG(IM1,J,K)*(G1+G2+T4+T5+S+T3)+G1+G2+T4+T5)+3*(
6029. SG(I,J,K)*(G1+G2+T1+T2+S+G1+G2*(G1*(P816+P861+P81+P846+P831**2)+1)
6030. ))**=T0*(P816+P861X02+P816X02+P861+P81+P846X02+P81X02+P846+2+P831=
6031. P831X02))+T3))/4.0
6032. DDPLX02=DZETA(KLOW)*(-QZINF02+DDZXL=XIXX(J,I)=QXINF02)
6033. TO=XIXX1(J,I)
6034. T1=1/DZETAC(K)
6035. AN2XD2=DDPL=R1KUXD2+TA33P+DDPLX02=R1KU+TA33P+2*TO=T1=QZINF=R1KUXD2
6036. +2*TO=T1=QZINF02=R1KU
6037.
6038. C XD3
6039. TO=XIXX(J,I)
6040. T1=CC8+P38
6041. T2=CC4+P88
6042. T3=CC5+P83+S
6043. T4=S*(T3+T2+T1)
6044. T5=(T4+CC5+P84+S+CC4+P89+CC8+P39)=TA12*(S*(CC5+P82+S+CC4+P87+CC8=
6045. P37)+T3+T2+T1)=TA11
6046. T6=(S*(CC5+P88+S+CC4+P83+CC8+P33)+T3+T2+T1)=TAJ1
6047. T7=(T4+CC5+P88+S+CC4+P83+CC8+P43)=TAJ2
6048. T8=XIXX1(J,I)
6049. DDPLX03=DZETA(KLOW)*((DDZXLX03=(TO*(T7+T8)+(TO**2-T8**2)=T5+T8=
6050. QXINF)+DDZYLX03=(T7+T8+TO+T5))
6051. AN2XD3=DDPLX03=R1KU+TA33P
6052.
6053. C XD4
6054. TO=XIXX(J,I)
6055. T1=CC8+P38
6056. T2=CC4+P88
6057. T3=CC5+P83+S
6058. T4=S*(T3+T2+T1)
6059. T5=(T4+CC5+P84+S+CC4+P89+CC8+P39)=TA12*(S*(CC5+P82+S+CC4+P87+CC8=
6060. P37)+T3+T2+T1)=TA11
6061. T6=(S*(CC5+P88+S+CC4+P83+CC8+P33)+T3+T2+T1)=TAJ1
6062. T7=(T4+CC5+P88+S+CC4+P83+CC8+P43)=TAJ2
6063. T8=XIXX1(J,I)
6064. DDPLX04=DZETA(KLOW)*((DDZXLX04=(TO*(T7+T8)+(TO**2-T8**2)=T5+T8=
6065. QXINF)+DDZYLX04=(T7+T8+TO+T5))
6066. AN2XD4=DDPLX04=R1KU+TA33P
6067.
6068. C XD5
6069. TO=XIXX(J,I)
6070. T1=CC8+P38
6071. T2=CC4+P88
6072. T3=CC5+P83+S
6073. T4=S*(T3+T2+T1)
6074. T5=(T4+CC5+P84+S+CC4+P89+CC8+P39)=TA12*(S*(CC5+P82+S+CC4+P87+CC8=
6075. P37)+T3+T2+T1)=TA11

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8072. T6:=(S+(CC5+P58+S+CC4+P83+CC8+P33))+T3+T2+T1)+TAJ1
8073. T7:=(T4+CC5+P58+S+CC4+P93+CC8+P43)+TAJ2
8074. T6=XIXX(J,I)
8075. DOPLKDS+DZETA(KLOW)=(DOZXLXDS+(TO*(T7+T6)+(TO**2+T8**2))+T5+T8*
8076. OXINF)+DDZYLXDS=(T7+T8+TO+T5))
8077. AN2XDS+DDPLXDS=RIKU+TA33P
8078.
8079. C
8080. ENDIF
8081. C
8082. IF (K.EQ.KUP.AND.I.GT.ITE.AND.J.LE.JTPM1) THEN
8083. C
8084. P
8085. C
8086. P36 = P(J,KM2,IM2)
8087. P37 = P(J,KM2,IM1)
8088. P38 = P(J,KM2,I)
8089. P39 = P(J,KM2,IP1)
8090. P56 = P(JM1,KM1,IM2)
8091. P57 = P(JM1,KM1,IM1)
8092. P58 = P(JM1,KM1,I)
8093. P59 = P(JM1,KM1,IP1)
8094. P61 = P(J,KM1,IM2)
8095. P62 = P(J,KM1,IM1)
8096. P63 = P(J,KM1,I)
8097. P64 = P(J,KM1,IP1)
8098. P65 = P(JP1,KM1,IM2)
8099. P67 = P(JP1,KM1,IM1)
8100. P68 = P(JP1,KM1,I)
8101. P69 = P(JP1,KM1,IP1)
8102. P81 = P(JM1,K,IM2)
8103. P82 = P(JM1,K,IM1)
8104. P83 = P(JM1,K,I)
8105. P84 = P(JM1,K,IP1)
8106. P86 = P(J,K,IM2)
8107. P87 = P(J,K,IM1)
8108. P88 = P(J,K,I)
8109. P89 = P(J,K,IP1)
8110. P91 = P(JP1,K,IM2)
8111. P92 = P(JP1,K,IM1)
8112. P93 = P(JP1,K,I)
8113. P94 = P(JP1,K,IP1)
8114. P111 = P(J,KP1,IM2)
8115. P112 = P(J,KP1,IM1)
8116. P113 = P(J,KP1,I)
8117. P114 = P(J,KP1,IP1)
8118. P182 = P(J,KLOW-2,ITE)
8119. P183 = P(J,KLOW-1,ITE)
8120. P184 = P(J,KLOW,ITE)
8121. P185 = P(J,KUP,ITE)
8122. P186 = P(J,KUP+1,ITE)
8123. P187 = P(J,KUP+2,ITE)
8124. C
8125. C
8126. C
8127. PC1 = DXII(I)=(P88+S+P89)+OXINF/XIXIP(J,I)
8128. PC2 = DXII(IM1)=(P87+S+P88)+OXINF/XIXIP(J,IM1)
8129. PC3 = DXII(IM2)=(P86+S+P87)+OXINF/XIXIP(J,IM2)
8130. PC7 = DXII(I)=(P63+S+P64)+OXINF/XIXIP(J,I)
8131. PC8 = DXII(IM1)=(P62+S+P63)+OXINF/XIXIP(J,IM1)
8132. PC9 = DXII(IM2)=(P61+S+P62)+OXINF/XIXIP(J,IM2)
8133. PC16 = XIXIP(J,I)=OXINF*S/XIXIP(J,I)+[AJ2(J)=(P84+P93-P88-P88)+AJ1
8134. (J)=(P88+P88-P84-P83))/2.0
8135. PC17 = XIXIP(J,IM1)=OXINF*S/XIXIP(J,IM1)+[AJ2(J)=(P93+P92-P88-P87)
8136. +AJ1(J)=(P88+P87-P83-P82))/2.0
8137. PC18 = XIXIP(J,IM2)=OXINF*S/XIXIP(J,IM2)+[AJ2(J)=(P92+P91-P87-P86)
8138. +AJ1(J)=(P87+P86-P82-P81))/2.0
8139. PC22 = XIXIP(J,I)=OXINF*S/XIXIP(J,I)+[AJ2(J)=(P89+P88-P64-P63)+AJ1
8140. (J)=(P64+P63-P59-P58))/2.0
8141. PC23 = XIXIP(J,IM1)=OXINF*S/XIXIP(J,IM1)+[AJ2(J)=(P88+P87-P63-P62)
8142. +AJ1(J)=(P63+P62-P58-P57))/2.0
8143. PC24 = XIXIP(J,IM2)=OXINF*S/XIXIP(J,IM2)+[AJ2(J)=(P87+P86-P62-P61)
8144. +AJ1(J)=(P62+P61-P57-P56))/2.0
8145. PC31 = -[A1K(K)=(CC2+P186+S+CC4+P184+S+CC8+P182+S+CC3+P187+CC1+
8146. P185+CC5+P183))+OZINF+(A1K(K)=(P89+P88-P64-P63)+A2K(K)=(-P89-P88+
8147. P114+P113))/2.0
8148. PC32 = -[A1K(K)=(CC2+P186+S+CC4+P184+S+CC8+P182+S+CC3+P187+CC1+
8149. P185+CC5+P183))+OZINF+(A1K(K)=(P88+P87-P63-P62)+A2K(K)=(-P88-P87+
8150. P113+P112))/2.0
8151. PC33 = -[A1K(K)=(CC2+P186+S+CC4+P184+S+CC8+P182+S+CC3+P187+CC1+
8152. P185+CC5+P183))+OZINF+(A1K(K)=(P87+P86-P62-P61)+A2K(K)=(-P87-P86+
8153. P112+P111))/2.0
8154. PC37 = -[A1K(KM1)=(CC2+P186+S+CC4+P184+S+CC8+P182+S+CC3+P187+CC1+
8155. P185+CC5+P183))+OZINF+(A2K(KM1)=(P89+P88-P64-P63)+A1K(KM1)=(P64+
8156. P83-P38-P38))/2.0
8157. PC38 = -[A1K(KM1)=(CC2+P186+S+CC4+P184+S+CC8+P182+S+CC3+P187+CC1+
8158. P185+CC5+P183))+OZINF+(A2K(KM1)=(P88+P87-P63-P62)+A1K(KM1)=(P63+
8159. P82-P38-P37))/2.0
8160. PC39 = -[A1K(KM1)=(CC2+P186+S+CC4+P184+S+CC8+P182+S+CC3+P187+CC1+
8161. P185+CC5+P183))+OZINF+(A2K(KM1)=(P87+P86-P62-P61)+A1K(KM1)=(P82+
8162. P81-P37-P36))/2.0
8163. PC46 = A1R(J,I)=(DXII(I)=(P88+S+P89)+OXINF/XIXIP(J,I))+XIXIP(J,I)
8164. =(XIXIP(J,I)+OXINF*S/XIXIP(J,I)+[AJ2(J)=(P94+P93-P89-P88)+AJ1(J)=
8165. (P89+P88-P64-P63))/2.0)
8166. PC47 = A1R(J,IM1)=(DXII(IM1)=(P87+S+P88)+OXINF/XIXIP(J,IM1))+
8167. XIXIP(J,IM1)=(XIXIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+[AJ2(J)=(P93+P92-
8168. P88-P87)+AJ1(J)=(P88+P87-P83-P82))/2.0)
8169. PC48 = A1R(J,IM2)=(DXII(IM2)=(P86+S+P87)+OXINF/XIXIP(J,IM2))+
8170. XIXIP(J,IM2)=(XIXIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+[AJ2(J)=(P92+P91-
8171. P87-P86)+AJ1(J)=(P87+P86-P82-P81))/2.0)
8172. PC52 = A1R(J,I)=(DXII(I)=(P63+S+P64)+OXINF/XIXIP(J,I))+XIXIP(J,I)
8173. =(XIXIP(J,I)+OXINF*S/XIXIP(J,I)+[AJ2(J)=(P68+P68-P64-P63)+AJ1(J)=
8174. (P64+P63-P59-P58))/2.0)
8175. PC53 = A1R(J,IM1)=(DXII(IM1)=(P62+S+P63)+OXINF/XIXIP(J,IM1))+
8176. XIXIP(J,IM1)=(XIXIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+[AJ2(J)=(P68+P67-
8177. P63-P62)+AJ1(J)=(P63+P62-P58-P57))/2.0)
8178. PC54 = A1R(J,IM2)=(DXII(IM2)=(P61+S+P62)+OXINF/XIXIP(J,IM2))+
8179. XIXIP(J,IM2)=(XIXIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+[AJ2(J)=(P67+P66-
8180. P62-P61)+AJ1(J)=(P62+P61-P57-P56))/2.0)
8181. PC61 = XIXIP(J,I)=(DXII(I)=(P88+S+P89)+OXINF/XIXIP(J,I))+XIXIP(J,I)
8182. =(OXINF*S/XIXIP(J,I)+[AJ2(J)=(P94+P93-P89-P88)+AJ1(J)=(P89+P88-
8183. P84-P83))/2.0)
8184. PC62 = XIXIP(J,IM1)=(DXII(IM1)=(P87+S+P88)+OXINF/XIXIP(J,IM1))+
8185. XIXIP(J,IM1)=OXINF*S/XIXIP(J,IM1)+[AJ2(J)=(P93+P92-P88-P87)+AJ1(J)
8186. =(P88+P87-P83-P82))/2.0)
8187. PC63 = XIXIP(J,IM2)=(DXII(IM2)=(P86+S+P87)+OXINF/XIXIP(J,IM2))+
8188. XIXIP(J,IM2)=OXINF*S/XIXIP(J,IM2)+[AJ2(J)=(P92+P91-P87-P86)+AJ1(J)
8189. =(P87+P86-P82-P81))/2.0)
8190. PC67 = XIXIP(J,I)=(DXII(I)=(P63+S+P64)+OXINF/XIXIP(J,I))+XIXIP(J,I)
8191. =(OXINF*S/XIXIP(J,I)+[AJ2(J)=(P69+P68-P64-P63)+AJ1(J)=(P64+P63-
8192. P59-P58))/2.0)
8193. PC68 = XIXIP(J,IM1)=(DXII(IM1)=(P62+S+P63)+OXINF/XIXIP(J,IM1))+
8194. XIXIP(J,IM1)=OXINF*S/XIXIP(J,IM1)+[AJ2(J)=(P68+P67-P63-P62)+AJ1(J)
8195. =(P63+P62-P58-P57))/2.0)
8196. PC69 = XIXIP(J,IM2)=(DXII(IM2)=(P61+S+P62)+OXINF/XIXIP(J,IM2))+
8197. XIXIP(J,IM2)=OXINF*S/XIXIP(J,IM2)+[AJ2(J)=(P67+P66-P62-P61)+AJ1(J)
8198. =(P62+P61-P57-P56))/2.0)
8199. C
8200. C
8201. R2KW,CIR
8202. TO:=[G1=(PC17+PC62+PC2=PC47+PC32**2)+1]**G2
8203. T1:=[G1=(PC18+PC63+PC3=PC48+PC33**2)+1]**G2
8204. T2:=[G1=(PC53+PC8+PC23=PC68+PC38**2)+1]**G2

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8204. T3=[G1+{PC54+PC9+PC24+PC88+PC38**2)+1}]==G2
8205. R2KW1=[SG[IM1,J,KM1]=[T3+S+T2]+SG[I,J,KM1]=[T2+S+{G1={PC52+PC7+PC22
8206. =PC67+PC37**2)+1}]==G2]+SG[IM1,J,K]=[T1+S+T0]+SG[I,J,K]=[T0+S+{G1=
8207. {PC18+PC61+PC1+PC48+PC31**2)+1}]==G2]+T3+T2+T1+T0]/4.0
8208. CIR=CIRC(J)
8209.
8210. C
8211. C DANOFI3
8212. C XD1
8213. PC1XD1 = OXINFXD1/XIXIP[J,I]
8214. PC2XD1 = OXINFXD1/XIXIP[J,IM1]
8215. PC3XD1 = OXINFXD1/XIXIP[J,IM2]
8216. PC7XD1 = OXINFXD1/XIXIP[J,I]
8217. PC8XD1 = OXINFXD1/XIXIP[J,IM1]
8218. PC9XD1 = OXINFXD1/XIXIP[J,IM2]
8219. PC18XD1 = XIYIP[J,I]+OXINFXD1=S/XIXIP[J,I]
8220. PC17XD1 = XIYIP[J,IM1]+OXINFXD1=S/XIXIP[J,IM1]
8221. PC18XD1 = XIYIP[J,IM2]+OXINFXD1=S/XIXIP[J,IM2]
8222. PC22XD1 = XIYIP[J,I]+OXINFXD1=S/XIXIP[J,I]
8223. PC23XD1 = XIYIP[J,IM1]+OXINFXD1=S/XIXIP[J,IM1]
8224. PC24XD1 = XIYIP[J,IM2]+OXINFXD1=S/XIXIP[J,IM2]
8225. PC31XD1 = OZINFXD1
8226. PC32XD1 = OZINFXD1
8227. PC33XD1 = OZINFXD1
8228. PC37XD1 = OZINFXD1
8229. PC38XD1 = OZINFXD1
8230. PC39XD1 = OZINFXD1
8231. PC48XD1 = XIYIP[J,I]**2+OXINFXD1=S/XIXIP[J,I]+A11R[J,I]+OXINFXD1/
8232. XIXIP[J,I]
8233. PC47XD1 = XIYIP[J,IM1]**2+OXINFXD1=S/XIXIP[J,IM1]+A11R[J,IM1]+
8234. OXINFXD1/XIXIP[J,IM1]
8235. PC48XD1 = XIYIP[J,IM2]**2+OXINFXD1=S/XIXIP[J,IM2]+A11R[J,IM2]+
8236. OXINFXD1/XIXIP[J,IM2]
8237. PC52XD1 = XIYIP[J,I]**2+OXINFXD1=S/XIXIP[J,I]+A11R[J,I]+OXINFXD1/
8238. XIXIP[J,I]
8239. PC53XD1 = XIYIP[J,IM1]**2+OXINFXD1=S/XIXIP[J,IM1]+A11R[J,IM1]+
8240. OXINFXD1/XIXIP[J,IM1]
8241. PC54XD1 = XIYIP[J,IM2]**2+OXINFXD1=S/XIXIP[J,IM2]+A11R[J,IM2]+
8242. OXINFXD1/XIXIP[J,IM2]
8243. PC81XD1 = XIYIP[J,I]+OXINFXD1=S/XIXIP[J,I]+XIYIP[J,I]+OXINFXD1/
8244. XIXIP[J,I]
8245. PC82XD1 = XIYIP[J,IM1]+OXINFXD1=S/XIXIP[J,IM1]+XIYIP[J,IM1]+
8246. OXINFXD1/XIXIP[J,IM1]
8247. PC83XD1 = XIYIP[J,IM2]+OXINFXD1=S/XIXIP[J,IM2]+XIYIP[J,IM2]+
8248. OXINFXD1/XIXIP[J,IM2]
8249. PC87XD1 = XIYIP[J,I]+OXINFXD1=S/XIXIP[J,I]+XIYIP[J,I]+OXINFXD1/
8250. XIXIP[J,I]
8251. PC88XD1 = XIYIP[J,IM1]+OXINFXD1=S/XIXIP[J,IM1]+XIYIP[J,IM1]+
8252. OXINFXD1/XIXIP[J,IM1]
8253. PC89XD1 = XIYIP[J,IM2]+OXINFXD1=S/XIXIP[J,IM2]+XIYIP[J,IM2]+
8254. OXINFXD1/XIXIP[J,IM2]
8255. T0=G2-1
8256. T1=[G1={PC17+PC82+PC2+PC47+PC32**2)+1}]==T0
8257. T2=PC17+PC82XD1+PC17XD1+PC82+PC2+PC47XD1+PC2XD1+PC47+2+PC32+
8258. PC32XD1
8259. T3=G1+G2+T1+T2
8260. T4=[G1={PC18+PC83+PC3+PC48+PC33**2)+1}]==T0
8261. T5=PC18+PC83XD1+PC18XD1+PC83+PC3+PC48XD1+PC3XD1+PC48+2+PC33+
8262. PC33XD1
8263. T6=[G1={PC53+PC8+PC23+PC68+PC38**2)+1}]==T0
8264. T7=PC53+PC8XD1+PC53XD1+PC8+PC23+PC68XD1+PC23XD1+PC68+2+PC38+
8265. PC38XD1
8266. T8=G1+G2+T5+T7
8267. T9=[G1={PC54+PC9+PC24+PC89+PC39**2)+1}]==T0
8268. T10=PC54+PC9XD1+PC54XD1+PC9+PC24+PC89XD1+PC24XD1+PC89+2+PC39+
8269. PC39XD1
8270. R2KWXD1=[SG[IM1,J,KM1]=[G1+G2+T9+T10+S+T8]+SG[I,J,KM1]=[G1+G2+T6+
8271. T7+S+G1+G2={G1={PC52+PC7+PC22+PC67+PC37**2)+1}]==T0+{PC52+PC7XD1+
8272. PC52XD1+PC7+PC22+PC67XD1+PC22XD1+PC67+2+PC37+PC37XD1}]+SG[IM1,J,K
8273. ]=[G1+G2+T4+T5+S+T3]+SG[I,J,K]=[G1+G2+T1+T2+S+G1+G2={G1={PC18+
8274. PC61+PC1+PC48+PC31**2)+1}]==T0+{PC18+PC61XD1+PC18XD1+PC61+PC1+
8275. PC48XD1+PC1XD1+PC48+2+PC31+PC31XD1}]+G1+G2+T9+T10+T8+G1+G2+T4+T5+
8276. T3]/4.0
8277. AN3XD1=CIR+R2KWXD1+TA33M
8278. C XD2
8279. PC1XD2 = OXINFXD2/XIXIP[J,I]
8280. PC2XD2 = OXINFXD2/XIXIP[J,IM1]
8281. PC3XD2 = OXINFXD2/XIXIP[J,IM2]
8282. PC7XD2 = OXINFXD2/XIXIP[J,I]
8283. PC8XD2 = OXINFXD2/XIXIP[J,IM1]
8284. PC9XD2 = OXINFXD2/XIXIP[J,IM2]
8285. PC18XD2 = XIYIP[J,I]+OXINFXD2=S/XIXIP[J,I]
8286. PC17XD2 = XIYIP[J,IM1]+OXINFXD2=S/XIXIP[J,IM1]
8287. PC18XD2 = XIYIP[J,IM2]+OXINFXD2=S/XIXIP[J,IM2]
8288. PC22XD2 = XIYIP[J,I]+OXINFXD2=S/XIXIP[J,I]
8289. PC23XD2 = XIYIP[J,IM1]+OXINFXD2=S/XIXIP[J,IM1]
8290. PC24XD2 = XIYIP[J,IM2]+OXINFXD2=S/XIXIP[J,IM2]
8291. PC31XD2 = OZINFXD2
8292. PC32XD2 = OZINFXD2
8293. PC33XD2 = OZINFXD2
8294. PC37XD2 = OZINFXD2
8295. PC38XD2 = OZINFXD2
8296. PC39XD2 = OZINFXD2
8297. PC48XD2 = XIYIP[J,I]**2+OXINFXD2=S/XIXIP[J,I]+A11R[J,I]+OXINFXD2/
8298. XIXIP[J,I]
8299. PC47XD2 = XIYIP[J,IM1]**2+OXINFXD2=S/XIXIP[J,IM1]+A11R[J,IM1]+
8300. OXINFXD2/XIXIP[J,IM1]
8301. PC48XD2 = XIYIP[J,IM2]**2+OXINFXD2=S/XIXIP[J,IM2]+A11R[J,IM2]+
8302. OXINFXD2/XIXIP[J,IM2]
8303. PC52XD2 = XIYIP[J,I]**2+OXINFXD2=S/XIXIP[J,I]+A11R[J,I]+OXINFXD2/
8304. XIXIP[J,I]
8305. PC53XD2 = XIYIP[J,IM1]**2+OXINFXD2=S/XIXIP[J,IM1]+A11R[J,IM1]+
8306. OXINFXD2/XIXIP[J,IM1]
8307. PC54XD2 = XIYIP[J,IM2]**2+OXINFXD2=S/XIXIP[J,IM2]+A11R[J,IM2]+
8308. OXINFXD2/XIXIP[J,IM2]
8309. PC81XD2 = XIYIP[J,I]+OXINFXD2=S/XIXIP[J,I]+XIYIP[J,I]+OXINFXD2/
8310. XIXIP[J,I]
8311. PC82XD2 = XIYIP[J,IM1]+OXINFXD2=S/XIXIP[J,IM1]+XIYIP[J,IM1]+
8312. OXINFXD2/XIXIP[J,IM1]
8313. PC83XD2 = XIYIP[J,IM2]+OXINFXD2=S/XIXIP[J,IM2]+XIYIP[J,IM2]+
8314. OXINFXD2/XIXIP[J,IM2]
8315. PC87XD2 = XIYIP[J,I]+OXINFXD2=S/XIXIP[J,I]+XIYIP[J,I]+OXINFXD2/
8316. XIXIP[J,I]
8317. PC88XD2 = XIYIP[J,IM1]+OXINFXD2=S/XIXIP[J,IM1]+XIYIP[J,IM1]+
8318. OXINFXD2/XIXIP[J,IM1]
8319. PC89XD2 = XIYIP[J,IM2]+OXINFXD2=S/XIXIP[J,IM2]+XIYIP[J,IM2]+
8320. OXINFXD2/XIXIP[J,IM2]
8321. T0=G2-1
8322. T1=[G1={PC17+PC82+PC2+PC47+PC32**2)+1}]==T0
8323. T2=PC17+PC82XD2+PC17XD2+PC82+PC2+PC47XD2+PC2XD2+PC47+2+PC32+
8324. PC32XD2
8325. T3=G1+G2+T1+T2
8326. T4=[G1={PC18+PC83+PC3+PC48+PC33**2)+1}]==T0
8327. T5=PC18+PC83XD2+PC18XD2+PC83+PC3+PC48XD2+PC3XD2+PC48+2+PC33+
8328. PC33XD2
8329. T6=[G1={PC53+PC8+PC23+PC68+PC38**2)+1}]==T0
8330. T7=PC53+PC8XD2+PC53XD2+PC8+PC23+PC68XD2+PC23XD2+PC68+2+PC38+
8331. PC38XD2
8332. T8=G1+G2+T6+T7
8333. T9=[G1={PC54+PC9+PC24+PC89+PC39**2)+1}]==T0
8334. T10=PC54+PC9XD2+PC54XD2+PC9+PC24+PC89XD2+PC24XD2+PC89+2+PC39+
8335. PC39XD2
8336. R2KWXD2=[SG[IM1,J,KM1]=[G1+G2+T9+T10+S+T8]+SG[I,J,KM1]=[G1+G2+T6+

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6335. T7=S+G1*G2*(G1*(PC52*PC7+PC22*PC67+PC37*2)+1)*TO*(PC52*PC7XD2+
6337. PC52XD2*PC7+PC22*PC67XD2+PC22XD2*PC67*2+PC37*PC37XD2))+SG(IM1,J,K
6338. )*(G1*G2*T4+T5*S+T3)+SG(I,J,K)=(G1*G2*T1+T2*S+G1*G2*(G1*(PC18*
6339. PC81+PC1*PC48+PC31*2)+1)*TO*(PC18*PC81XD2+PC18XD2*PC81+PC1*
6340. PC48XD2+PC1XD2*PC48*2+PC31*PC31XD2))+G1*G2*T8+T10+T8*G1*G2*T4+T5*
6341. T3)/4.0
6342. AN3XD2=CIR=R2KWXD2=TA33M
6343.
6344. ENDDIF
6345.
6346. IF (K.EQ.KLOW.AND.I.GT.ITE.AND.J.LE.JTPM1) THEN
6347.
6348. C
6349. C
6350. C
6351. P61 = P(J,KM1,IM2)
6352. P62 = P(J,KM1,IM1)
6353. P63 = P(J,KM1,I)
6354. P64 = P(J,KM1,IP1)
6355. P61 = P(JM1,K,IM2)
6356. P62 = P(JM1,K,IM1)
6357. P63 = P(JM1,K,I)
6358. P64 = P(JM1,K,IP1)
6359. P65 = P(J,K,IM2)
6360. P66 = P(J,K,IM1)
6361. P67 = P(J,K,I)
6362. P68 = P(J,K,IP1)
6363. P69 = P(JP1,K,IM2)
6364. P70 = P(JP1,K,IM1)
6365. P71 = P(JP1,K,I)
6366. P72 = P(JP1,K,IP1)
6367. P106 = P(JM1,KP1,IM2)
6368. P107 = P(JM1,KP1,IM1)
6369. P108 = P(JM1,KP1,I)
6370. P109 = P(JM1,KP1,IP1)
6371. P111 = P(J,KP1,IM2)
6372. P112 = P(J,KP1,IM1)
6373. P113 = P(J,KP1,I)
6374. P114 = P(J,KP1,IP1)
6375. P115 = P(JP1,KP1,IM2)
6376. P116 = P(JP1,KP1,IM1)
6377. P117 = P(JP1,KP1,I)
6378. P118 = P(JP1,KP1,IP1)
6379. P136 = P(J,KP2,IM2)
6380. P137 = P(J,KP2,IM1)
6381. P138 = P(J,KP2,I)
6382. P139 = P(J,KP2,IP1)
6383. P182 = P(J,KLOW-2,ITE)
6384. P183 = P(J,KLOW-1,ITE)
6385. P184 = P(J,KLOW,ITE)
6386. P185 = P(J,KUP,ITE)
6387. P186 = P(J,KUP+1,ITE)
6388. P187 = P(J,KUP+2,ITE)
6389.
6390. C
6391. C
6392. C
6393. PD1 = DXII(I)=(P66+S+P69)+OXINF/XIXIP(J,I)
6394. PD2 = DXII(IM1)=(P67+S+P68)+OXINF/XIXIP(J,IM1)
6395. PD3 = DXII(IM2)=(P66+S+P67)+OXINF/XIXIP(J,IM2)
6396. PD13 = DXII(I)=(P113+S+P114)+OXINF/XIXIP(J,I)
6397. PD14 = DXII(IM1)=(P112+S+P113)+OXINF/XIXIP(J,IM1)
6398. PD15 = DXII(IM2)=(P111+S+P112)+OXINF/XIXIP(J,IM2)
6399. PD16 = XIYIP(J,I)+OXINF*S/XIXIP(J,I)+(AJ2(J)=(P64+P63-P69-P68)+AJ1
6400. (J)=(P69+P68-P64-P63))/2.0
6401. PD17 = XIYIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P63+P62-P68-P67)+
6402. AJ1(J)=(P68+P67-P63-P62))/2.0
6403. PD18 = XIYIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P62+P61-P67-P66)+
6404. AJ1(J)=(P67+P66-P62-P61))/2.0
6405. PD28 = XIYIP(J,I)+OXINF*S/XIXIP(J,I)+(AJ2(J)=(P119+P118-P114-P113)+
6406. AJ1(J)=(P114+P113-P109-P108))/2.0
6407. PD29 = XIYIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P118+P117-P113-
6408. P112)+AJ1(J)=(P113+P112-P108-P107))/2.0
6409. PD30 = XIYIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P117+P116-P112-
6410. P111)+AJ1(J)=(P112+P111-P107-P106))/2.0
6411. PD31 = -(A2K(K)=(CC2+P186+S+CC4+P184+S+CC5+P182+S+CC3+P187+CC1+
6412. P185+CC3+P183))+OXINF+(A1K(K)=(P69+P68-P64-P63)+A2K(K)=(-P69-P68+
6413. P114+P113))/2.0
6414. PD32 = -(A2K(K)=(CC2+P186+S+CC4+P184+S+CC5+P182+S+CC3+P187+CC1+
6415. P185+CC3+P183))+OXINF+(A1K(K)=(P68+P67-P63-P62)+A2K(K)=(-P68-P67+
6416. P113+P112))/2.0
6417. PD33 = -(A2K(K)=(CC2+P186+S+CC4+P184+S+CC5+P182+S+CC3+P187+CC1+
6418. P185+CC3+P183))+OXINF+(A1K(K)=(P67+P66-P62-P61)+A2K(K)=(-P67-P66+
6419. P112+P111))/2.0
6420. PD43 = -(A2K(KP1)=(CC2+P186+S+CC4+P184+S+CC5+P182+S+CC3+P187+CC1+
6421. P185+CC3+P183))+OXINF+(A1K(KP1)=(-P69-P68-P114+P113)+A2K(KP1)=(
6422. P139+P138-P114-P113))/2.0
6423. PD44 = -(A2K(KP1)=(CC2+P186+S+CC4+P184+S+CC5+P182+S+CC3+P187+CC1+
6424. P185+CC3+P183))+OXINF+(A1K(KP1)=(-P68-P67-P113+P112)+A2K(KP1)=(
6425. P138+P137-P113-P112))/2.0
6426. PD45 = -(A2K(KP1)=(CC2+P186+S+CC4+P184+S+CC5+P182+S+CC3+P187+CC1+
6427. P185+CC3+P183))+OXINF+(A1K(KP1)=(-P67-P66+P112+P111)+A2K(KP1)=(
6428. P137+P136-P112-P111))/2.0
6429. PD46 = A1R(I,J)=(DXII(I)=(P68+S+P69)+OXINF/XIXIP(J,I))+XIXIP(J,I)
6430. +XIXIP(J,I)+OXINF*S/XIXIP(J,I)+(AJ2(J)=(P64+P63-P69-P68)+AJ1(J)=
6431. (P69+P68-P64-P63))/2.0)
6432. PD47 = A1R(J,IM1)=(DXII(IM1)=(P67+S+P68)+OXINF/XIXIP(J,IM1))+
6433. XIYIP(J,IM1)=(XIYIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P63+P62-
6434. P68-P67)+AJ1(J)=(P68+P67-P63-P62))/2.0)
6435. PD48 = A1R(J,IM2)=(DXII(IM2)=(P66+S+P67)+OXINF/XIXIP(J,IM2))+
6436. XIYIP(J,IM2)=(XIYIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P62+P61-
6437. P67-P66)+AJ1(J)=(P67+P66-P62-P61))/2.0)
6438. PD56 = A1R(I,J)=(DXII(I)=(P113+S+P114)+OXINF/XIXIP(J,I))+XIXIP(J,
6439. I)=(XIYIP(J,I)+OXINF*S/XIXIP(J,I)+(AJ2(J)=(P119+P118-P114-P113)+
6440. AJ1(J)=(P114+P113-P109-P108))/2.0)
6441. PD59 = A1R(J,IM1)=(DXII(IM1)=(P112+S+P113)+OXINF/XIXIP(J,IM1))+
6442. XIYIP(J,IM1)=(XIYIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P118+
6443. P117-P113-P112)+AJ1(J)=(P113+P112-P108-P107))/2.0)
6444. PD60 = A1R(J,IM2)=(DXII(IM2)=(P111+S+P112)+OXINF/XIXIP(J,IM2))+
6445. XIYIP(J,IM2)=(XIYIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P117+
6446. P116-P112-P111)+AJ1(J)=(P112+P111-P107-P106))/2.0)
6447. PD61 = XIYIP(J,I)=(DXII(I)=(P68+S+P69)+OXINF/XIXIP(J,I))+XIXIP(J,I)
6448. +OXINF*S/XIXIP(J,I)+(AJ2(J)=(P64+P63-P69-P68)+AJ1(J)=(P69+P68-
6449. P64-P63))/2.0
6450. PD62 = XIYIP(J,IM1)=(DXII(IM1)=(P67+S+P68)+OXINF/XIXIP(J,IM1))+
6451. XIYIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P63+P62-P68-P67)+AJ1(J)
6452. )=(P68+P67-P63-P62))/2.0
6453. PD63 = XIYIP(J,IM2)=(DXII(IM2)=(P66+S+P67)+OXINF/XIXIP(J,IM2))+
6454. XIYIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P62+P61-P67-P66)+AJ1(J)
6455. )=(P67+P66-P62-P61))/2.0
6456. PD73 = XIYIP(J,I)=(DXII(I)=(P113+S+P114)+OXINF/XIXIP(J,I))+XIXIP(J,
6457. I)+OXINF*S/XIXIP(J,I)+(AJ2(J)=(P119+P118-P114-P113)+AJ1(J)=(P114+
6458. P113-P109-P108))/2.0
6459. PD74 = XIYIP(J,IM1)=(DXII(IM1)=(P112+S+P113)+OXINF/XIXIP(J,IM1))+
6460. XIYIP(J,IM1)+OXINF*S/XIXIP(J,IM1)+(AJ2(J)=(P118+P117-P113-P112)+
6461. AJ1(J)=(P113+P112-P108-P107))/2.0
6462. PD75 = XIYIP(J,IM2)=(DXII(IM2)=(P111+S+P112)+OXINF/XIXIP(J,IM2))+
6463. XIYIP(J,IM2)+OXINF*S/XIXIP(J,IM2)+(AJ2(J)=(P117+P116-P112-P111)+
6464. AJ1(J)=(P112+P111-P107-P106))/2.0
6465.
6466. C
6467. C
6468. C
6469. R2KP,CIR
6470.
6471. TO=(G1*(PD17+PD62+PD2+PD47+PD32*2)+1)*G2
6472. T1=(G1*(PD18+PD63+PD3+PD48+PD33*2)+1)*G2

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8468. T2:=(G1+(PD29+PD74+PD14+PD58+PD44==2)+1)==G2
8469. T3:=(G1+(PD30+PD75+PD15+PD60+PD45==2)+1)==G2
8470. R2KP1:=(SG(IM1,J,KP1))=(T3+S+T2)+SG(I,J,KP1)=(T2+S+(G1+(PD28+PD73+
8471. PD13+PD58+PD43==2)+1)+G2)+SG(IM1,J,K)=(T1+S+T0)+SG(I,J,K)=(T0+S+
8472. (G1+(PD18+PD61+PD1+PD48+PD31==2)+1)+G2)+T3+T2+T1+T0)/4.0
8473. CIR=CIRC(J)
8474.
8475. C DANOF14
8476. C
8477. C XD1
8478. PD1XD1 = OXINFXD1/XIXIP(J,I)
8479. PD2XD1 = OXINFXD1/XIXIP(J,IM1)
8480. PD3XD1 = OXINFXD1/XIXIP(J,IM2)
8481. PD13XD1 = OXINFXD1/XIXIP(J,I)
8482. PD14XD1 = OXINFXD1/XIXIP(J,IM1)
8483. PD15XD1 = OXINFXD1/XIXIP(J,IM2)
8484. PD16XD1 = XIYIP(J,I)=OXINFXD1=S/XIXIP(J,I)
8485. PD17XD1 = XIYIP(J,IM1)=OXINFXD1=S/XIXIP(J,IM1)
8486. PD18XD1 = XIYIP(J,IM2)=OXINFXD1=S/XIXIP(J,IM2)
8487. PD28XD1 = XIYIP(J,I)=OXINFXD1=S/XIXIP(J,I)
8488. PD29XD1 = XIYIP(J,IM1)=OXINFXD1=S/XIXIP(J,IM1)
8489. PD30XD1 = XIYIP(J,IM2)=OXINFXD1=S/XIXIP(J,IM2)
8490. PD31XD1 = OZINFXD1
8491. PD32XD1 = OZINFXD1
8492. PD33XD1 = OZINFXD1
8493. PD43XD1 = OZINFXD1
8494. PD44XD1 = OZINFXD1
8495. PD45XD1 = OZINFXD1
8496. PD46XD1 = XIYIP(J,I)==2*OXINFXD1=S/XIXIP(J,I)+A11R(J,I)=OXINFXD1/
8497. XIXIP(J,I)
8498. PD47XD1 = XIYIP(J,IM1)==2*OXINFXD1=S/XIXIP(J,IM1)+A11R(J,IM1)=
8499. OXINFXD1/XIXIP(J,IM1)
8500. PD48XD1 = XIYIP(J,IM2)==2*OXINFXD1=S/XIXIP(J,IM2)+A11R(J,IM2)=
8501. OXINFXD1/XIXIP(J,IM2)
8502. PD58XD1 = XIYIP(J,I)==2*OXINFXD1=S/XIXIP(J,I)+A11R(J,I)=OXINFXD1/
8503. XIXIP(J,I)
8504. PD59XD1 = XIYIP(J,IM1)==2*OXINFXD1=S/XIXIP(J,IM1)+A11R(J,IM1)=
8505. OXINFXD1/XIXIP(J,IM1)
8506. PD60XD1 = XIYIP(J,IM2)==2*OXINFXD1=S/XIXIP(J,IM2)+A11R(J,IM2)=
8507. OXINFXD1/XIXIP(J,IM2)
8508. PD61XD1 = XIYIP(J,I)=OXINFXD1=S/XIXIP(J,I)+XIYIP(J,I)=OXINFXD1/
8509. XIXIP(J,I)
8510. PD62XD1 = XIYIP(J,IM1)=OXINFXD1=S/XIXIP(J,IM1)+XIYIP(J,IM1)=
8511. OXINFXD1/XIXIP(J,IM1)
8512. PD63XD1 = XIYIP(J,IM2)=OXINFXD1=S/XIXIP(J,IM2)+XIYIP(J,IM2)=
8513. OXINFXD1/XIXIP(J,IM2)
8514. PD73XD1 = XIYIP(J,I)=OXINFXD1=S/XIXIP(J,I)+XIYIP(J,I)=OXINFXD1/
8515. XIXIP(J,I)
8516. PD74XD1 = XIYIP(J,IM1)=OXINFXD1=S/XIXIP(J,IM1)+XIYIP(J,IM1)=
8517. OXINFXD1/XIXIP(J,IM1)
8518. PD75XD1 = XIYIP(J,IM2)=OXINFXD1=S/XIXIP(J,IM2)+XIYIP(J,IM2)=
8519. OXINFXD1/XIXIP(J,IM2)
8520. T0=G2-1
8521. T1:=(G1+(PD17+PD62+PD2+PD47+PD32==2)+1)==T0
8522. T2=PD17+PD62XD1+PD17XD1+PD62+PD2+PD47XD1+PD2XD1=PD47+2+PD32=
8523. PD32XD1
8524. T3=G1+G2+T1+T2
8525. T4:=(G1+(PD18+PD63+PD3+PD48+PD33==2)+1)==T0
8526. T5=PD18+PD63XD1+PD18XD1+PD63+PD3+PD48XD1+PD3XD1=PD48+2+PD33=
8527. PD33XD1
8528. T6:=(G1+(PD28+PD74+PD14+PD58+PD44==2)+1)==T0
8529. T7=PD28+PD74XD1+PD28XD1+PD74+PD14+PD58XD1+PD14XD1=PD58+2+PD44=
8530. PD44XD1
8531. T8=G1+G2+T6+T7
8532. T9:=(G1+(PD30+PD75+PD15+PD60+PD45==2)+1)==T0
8533. T10=PD30+PD75XD1+PD30XD1+PD75+PD15+PD60XD1+PD15XD1=PD60+2+PD45=
8534. PD45XD1
8535. R2KPXD1:=(SG(IM1,J,KP1))=(G1+G2+T8+T10+S+T8)+SG(I,J,KP1)=(G1+G2+T8=
8536. T7+S+G1+G2=(G1+(PD28+PD73+PD13+PD58+PD43==2)+1)+T0=(PD28+PD73XD1+
8537. PD28XD1+PD73+PD13+PD58XD1+PD13XD1+PD58+2+PD43+PD43XD1))+SG(IM1,J
8538. ,K)=(G1+G2+T4+T5+S+T3)+SG(I,J,K)=(G1+G2+T1+T2+S+G1+G2=(G1+(PD18=
8539. PD61+PD18+PD63+PD31==2)+1)+T0=(PD18+PD61XD1+PD18XD1+PD61+PD1=
8540. PD48XD1+PD1XD1+PD48+2+PD31+PD31XD1))+G1+G2+T8+T10+T8+G1+G2+T4+T5+
8541. T3)/4.0
8542. AN4XD1=CIR=R2KPXD1=S+TA33P
8543. C XD2
8544. PD1XD2 = OXINFXD2/XIXIP(J,I)
8545. PD2XD2 = OXINFXD2/XIXIP(J,IM1)
8546. PD3XD2 = OXINFXD2/XIXIP(J,IM2)
8547. PD13XD2 = OXINFXD2/XIXIP(J,I)
8548. PD14XD2 = OXINFXD2/XIXIP(J,IM1)
8549. PD15XD2 = OXINFXD2/XIXIP(J,IM2)
8550. PD16XD2 = XIYIP(J,I)=OXINFXD2=S/XIXIP(J,I)
8551. PD17XD2 = XIYIP(J,IM1)=OXINFXD2=S/XIXIP(J,IM1)
8552. PD18XD2 = XIYIP(J,IM2)=OXINFXD2=S/XIXIP(J,IM2)
8553. PD28XD2 = XIYIP(J,I)=OXINFXD2=S/XIXIP(J,I)
8554. PD29XD2 = XIYIP(J,IM1)=OXINFXD2=S/XIXIP(J,IM1)
8555. PD30XD2 = XIYIP(J,IM2)=OXINFXD2=S/XIXIP(J,IM2)
8556. PD31XD2 = OZINFXD2
8557. PD32XD2 = OZINFXD2
8558. PD33XD2 = OZINFXD2
8559. PD43XD2 = OZINFXD2
8560. PD44XD2 = OZINFXD2
8561. PD45XD2 = OZINFXD2
8562. PD46XD2 = XIYIP(J,I)==2*OXINFXD2=S/XIXIP(J,I)+A11R(J,I)=OXINFXD2/
8563. XIXIP(J,I)
8564. PD47XD2 = XIYIP(J,IM1)==2*OXINFXD2=S/XIXIP(J,IM1)+A11R(J,IM1)=
8565. OXINFXD2/XIXIP(J,IM1)
8566. PD48XD2 = XIYIP(J,IM2)==2*OXINFXD2=S/XIXIP(J,IM2)+A11R(J,IM2)=
8567. OXINFXD2/XIXIP(J,IM2)
8568. PD58XD2 = XIYIP(J,I)==2*OXINFXD2=S/XIXIP(J,I)+A11R(J,I)=OXINFXD2/
8569. XIXIP(J,I)
8570. PD59XD2 = XIYIP(J,IM1)==2*OXINFXD2=S/XIXIP(J,IM1)+A11R(J,IM1)=
8571. OXINFXD2/XIXIP(J,IM1)
8572. PD60XD2 = XIYIP(J,IM2)==2*OXINFXD2=S/XIXIP(J,IM2)+A11R(J,IM2)=
8573. OXINFXD2/XIXIP(J,IM2)
8574. PD61XD2 = XIYIP(J,I)=OXINFXD2=S/XIXIP(J,I)+XIYIP(J,I)=OXINFXD2/
8575. XIXIP(J,I)
8576. PD62XD2 = XIYIP(J,IM1)=OXINFXD2=S/XIXIP(J,IM1)+XIYIP(J,IM1)=
8577. OXINFXD2/XIXIP(J,IM1)
8578. PD63XD2 = XIYIP(J,IM2)=OXINFXD2=S/XIXIP(J,IM2)+XIYIP(J,IM2)=
8579. OXINFXD2/XIXIP(J,IM2)
8580. PD73XD2 = XIYIP(J,I)=OXINFXD2=S/XIXIP(J,I)+XIYIP(J,I)=OXINFXD2/
8581. XIXIP(J,I)
8582. PD74XD2 = XIYIP(J,IM1)=OXINFXD2=S/XIXIP(J,IM1)+XIYIP(J,IM1)=
8583. OXINFXD2/XIXIP(J,IM1)
8584. PD75XD2 = XIYIP(J,IM2)=OXINFXD2=S/XIXIP(J,IM2)+XIYIP(J,IM2)=
8585. OXINFXD2/XIXIP(J,IM2)
8586. T0=G2-1
8587. T1:=(G1+(PD17+PD62+PD2+PD47+PD32==2)+1)==T0
8588. T2=PD17+PD62XD2+PD17XD2+PD62+PD2+PD47XD2+PD2XD2=PD47+2+PD32=
8589. PD32XD2
8590. T3=G1+G2+T1+T2
8591. T4:=(G1+(PD18+PD63+PD3+PD48+PD33==2)+1)==T0
8592. T5=PD18+PD63XD2+PD18XD2+PD63+PD3+PD48XD2+PD3XD2=PD48+2+PD33=
8593. PD33XD2
8594. T6:=(G1+(PD28+PD74+PD14+PD58+PD44==2)+1)==T0
8595. T7=PD28+PD74XD2+PD28XD2+PD74+PD14+PD58XD2+PD14XD2=PD58+2+PD44=
8596. PD44XD2
8597. T8=G1+G2+T8+T7
8598. T9:=(G1+(PD30+PD75+PD15+PD60+PD45==2)+1)==T0
8599. T10=PD30+PD75XD2+PD30XD2+PD75+PD15+PD60XD2+PD15XD2=PD60+2+PD45=
8600. PD45XD2

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8600. R2KPD2: (SG(IM1,J,KP1)) = (G1*G2*T8-T10+S-T4) + SG(I,J,KP1) * (G1*G2*T6+
8601. T7+S-G1*G2) * (G1*(PD28+PD73+PD13+PD58+PD43+2)+1) + TO*(PD28+PD73XD2
8602. +PD28XD2+PD73+PD13+PD58XD2+PD13XD2+PD58+2+PD43+PD43XD2)) + SG(IM1,J
8603. ,K) * (G1*G2*T4+T5+S+T3) + SG(I,J,K) * (G1*G2*T1+T2+S+G1*G2*(G1*(PD16+
8604. PD61+PD1+PD46+PD31+2)+1) + TO*(PD16+PD61XD2+PD16XD2+PD61+PD1+
8605. PD46XD2+PD1XD2+PD46+2+PD31+PD31XD2)) + G1*G2*T8+T10+T4+G1*G2*T4+T5+
8606. T3)/4.0
8607. AN4XD2+CIR=R2KPD2=S*TA33P
8608.
8609. ENDIF
8610.
8611. C
8612. RISM = RESXD1 + AN1XD1 + AN2XD1 + AN3XD1 + AN4XD1
8613. RISA = RESXD2 + AN1XD2 + AN2XD2 + AN3XD2 + AN4XD2
8614. RIST = AN1XD3 + AN2XD3
8615. RISC = AN1XD4 + AN2XD4
8616. RISL = AN1XD5 + AN2XD5
8617.
8618. C
8619. RETURN
8620. END
8621. SUBROUTINE RE(J,I,K,JJ,II,KK,M)
8622. RE.FOR
8623. C
8624. INCLUDE (INTROM)
8625. C P38
8626. IF (CND(II,JJ,KK,IM2,J,KM2)) THEN
8627. M = 1
8628. C P37
8629. ELSEIF (CND(II,JJ,KK,IM1,J,KM2)) THEN
8630. M = 1
8631. C P38
8632. ELSEIF (CND(II,JJ,KK,I,J,KM2)) THEN
8633. M = 1
8634. C P39
8635. ELSEIF (CND(II,JJ,KK,IP1,J,KM2)) THEN
8636. M = 1
8637. C P56
8638. ELSEIF (CND(II,JJ,KK,IM2,JM1,KM1)) THEN
8639. M = 1
8640. C P57
8641. ELSEIF (CND(II,JJ,KK,IM1,JM1,KM1)) THEN
8642. M = 1
8643. C P58
8644. ELSEIF (CND(II,JJ,KK,I,JM1,KM1)) THEN
8645. M = 1
8646. C P59
8647. ELSEIF (CND(II,JJ,KK,IP1,JM1,KM1)) THEN
8648. M = 1
8649. C P61
8650. ELSEIF (CND(II,JJ,KK,IM2,J,KM1)) THEN
8651. M = 1
8652. C P62
8653. ELSEIF (CND(II,JJ,KK,IM1,J,KM1)) THEN
8654. M = 1
8655. C P63
8656. ELSEIF (CND(II,JJ,KK,I,J,KM1)) THEN
8657. M = 1
8658. C P64
8659. ELSEIF (CND(II,JJ,KK,IP1,J,KM1)) THEN
8660. M = 1
8661. C P65
8662. ELSEIF (CND(II,JJ,KK,IM2,JP1,KM1)) THEN
8663. M = 1
8664. C P67
8665. ELSEIF (CND(II,JJ,KK,IM1,JP1,KM1)) THEN
8666. M = 1
8667. C P68
8668. ELSEIF (CND(II,JJ,KK,I,JP1,KM1)) THEN
8669. M = 1
8670. C P69
8671. ELSEIF (CND(II,JJ,KK,IP1,JP1,KM1)) THEN
8672. M = 1
8673. C P75
8674. ELSEIF (CND(II,JJ,KK,IM2,JM2,K)) THEN
8675. M = 1
8676. C P77
8677. ELSEIF (CND(II,JJ,KK,IM1,JM2,K)) THEN
8678. M = 1
8679. C P78
8680. ELSEIF (CND(II,JJ,KK,I,JM2,K)) THEN
8681. M = 1
8682. C P79
8683. ELSEIF (CND(II,JJ,KK,IP1,JM2,K)) THEN
8684. M = 1
8685. C P81
8686. ELSEIF (CND(II,JJ,KK,IM2,JM1,K)) THEN
8687. M = 1
8688. C P82
8689. ELSEIF (CND(II,JJ,KK,IM1,JM1,K)) THEN
8690. M = 1
8691. C P83
8692. ELSEIF (CND(II,JJ,KK,I,JM1,K)) THEN
8693. M = 1
8694. C P84
8695. ELSEIF (CND(II,JJ,KK,IP1,JM1,K)) THEN
8696. M = 1
8697. C P85
8698. ELSEIF (CND(II,JJ,KK,IM2,J,K)) THEN
8699. M = 1
8700. C P87
8701. ELSEIF (CND(II,JJ,KK,IM1,J,K)) THEN
8702. M = 1
8703. C P88
8704. ELSEIF (CND(II,JJ,KK,I,J,K)) THEN
8705. M = 1
8706. C P89
8707. ELSEIF (CND(II,JJ,KK,IP1,J,K)) THEN
8708. M = 1
8709. C P91
8710. ELSEIF (CND(II,JJ,KK,IM2,JP1,K)) THEN
8711. M = 1
8712. C P92
8713. ELSEIF (CND(II,JJ,KK,IM1,JP1,K)) THEN
8714. M = 1
8715. C P93
8716. ELSEIF (CND(II,JJ,KK,I,JP1,K)) THEN
8717. M = 1
8718. C P94
8719. ELSEIF (CND(II,JJ,KK,IP1,JP1,K)) THEN
8720. M = 1
8721. C P96
8722. ELSEIF (CND(II,JJ,KK,IM2,JP2,K)) THEN
8723. M = 1
8724. C P97
8725. ELSEIF (CND(II,JJ,KK,IM1,JP2,K)) THEN
8726. M = 1
8727. C P98
8728. ELSEIF (CND(II,JJ,KK,I,JP2,K)) THEN
8729. M = 1
8730. C P99
8731. ELSEIF (CND(II,JJ,KK,IP1,JP2,K)) THEN

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8732.      ELSEIF (CND(II,JJ,KK,IM2,JM1,KP1)) THEN
8733.          M = 1
8734.      C P107
8735.      ELSEIF (CND(II,JJ,KK,IM1,JM1,KP1)) THEN
8736.          M = 1
8737.      C P108
8738.      ELSEIF (CND(II,JJ,KK,I,JM1,KP1)) THEN
8739.          M = 1
8740.      C P109
8741.      ELSEIF (CND(II,JJ,KK,IP1,JM1,KP1)) THEN
8742.          M = 1
8743.      C P111
8744.      ELSEIF (CND(II,JJ,KK,IM2,J,KP1)) THEN
8745.          M = 1
8746.      C P112
8747.      ELSEIF (CND(II,JJ,KK,IM1,J,KP1)) THEN
8748.          M = 1
8749.      C P113
8750.      ELSEIF (CND(II,JJ,KK,I,J,KP1)) THEN
8751.          M = 1
8752.      C P114
8753.      ELSEIF (CND(II,JJ,KK,IP1,J,KP1)) THEN
8754.          M = 1
8755.      C P116
8756.      ELSEIF (CND(II,JJ,KK,IM2,JP1,KP1)) THEN
8757.          M = 1
8758.      C P117
8759.      ELSEIF (CND(II,JJ,KK,IM1,JP1,KP1)) THEN
8760.          M = 1
8761.      C P118
8762.      ELSEIF (CND(II,JJ,KK,I,JP1,KP1)) THEN
8763.          M = 1
8764.      C P119
8765.      ELSEIF (CND(II,JJ,KK,IP1,JP1,KP1)) THEN
8766.          M = 1
8767.      C P136
8768.      ELSEIF (CND(II,JJ,KK,IM2,J,KP2)) THEN
8769.          M = 1
8770.      C P137
8771.      ELSEIF (CND(II,JJ,KK,IM1,J,KP2)) THEN
8772.          M = 1
8773.      C P138
8774.      ELSEIF (CND(II,JJ,KK,I,J,KP2)) THEN
8775.          M = 1
8776.      C P139
8777.      ELSEIF (CND(II,JJ,KK,IP1,J,KP2)) THEN
8778.          M = 1
8779.      ENDIF
8780.      C
8781.      RETURN
8782.      END
8783.      SUBROUTINE RIE(J,I,K,JJ,II,KK,MM)
8784.      C
8785.      RIE.FOR
8786.      C
8787.      INCLUDE (INTROM)
8788.      C P81
8789.      IF (CND(II,JJ,KK,IM2,JM1,K)) THEN
8790.          MM = 1
8791.      C P82
8792.      ELSEIF (CND(II,JJ,KK,IM1,JM1,K)) THEN
8793.          MM = 1
8794.      C P83
8795.      ELSEIF (CND(II,JJ,KK,I,JM1,K)) THEN
8796.          MM = 1
8797.      C P84
8798.      ELSEIF (CND(II,JJ,KK,IP1,JM1,K)) THEN
8799.          MM = 1
8800.      C P86
8801.      ELSEIF (CND(II,JJ,KK,IM2,J,K)) THEN
8802.          MM = 1
8803.      C P87
8804.      ELSEIF (CND(II,JJ,KK,IM1,J,K)) THEN
8805.          MM = 1
8806.      C P88
8807.      ELSEIF (CND(II,JJ,KK,I,J,K)) THEN
8808.          MM = 1
8809.      C P89
8810.      ELSEIF (CND(II,JJ,KK,IP1,J,K)) THEN
8811.          MM = 1
8812.      C P91
8813.      ELSEIF (CND(II,JJ,KK,IM2,JP1,K)) THEN
8814.          MM = 1
8815.      C P92
8816.      ELSEIF (CND(II,JJ,KK,IM1,JP1,K)) THEN
8817.          MM = 1
8818.      C P93
8819.      ELSEIF (CND(II,JJ,KK,I,JP1,K)) THEN
8820.          MM = 1
8821.      C P94
8822.      ELSEIF (CND(II,JJ,KK,IP1,JP1,K)) THEN
8823.          MM = 1
8824.      C P108
8825.      ELSEIF (CND(II,JJ,KK,IM2,JM1,KP1)) THEN
8826.          MM = 1
8827.      C P107
8828.      ELSEIF (CND(II,JJ,KK,IM1,JM1,KP1)) THEN
8829.          MM = 1
8830.      C P108
8831.      ELSEIF (CND(II,JJ,KK,I,JM1,KP1)) THEN
8832.          MM = 1
8833.      C P109
8834.      ELSEIF (CND(II,JJ,KK,IP1,JM1,KP1)) THEN
8835.          MM = 1
8836.      C P111
8837.      ELSEIF (CND(II,JJ,KK,IM2,J,KP1)) THEN
8838.          MM = 1
8839.      C P112
8840.      ELSEIF (CND(II,JJ,KK,IM1,J,KP1)) THEN
8841.          MM = 1
8842.      C P113
8843.      ELSEIF (CND(II,JJ,KK,I,J,KP1)) THEN
8844.          MM = 1
8845.      C P114
8846.      ELSEIF (CND(II,JJ,KK,IP1,J,KP1)) THEN
8847.          MM = 1
8848.      C P116
8849.      ELSEIF (CND(II,JJ,KK,IM2,JP1,KP1)) THEN
8850.          MM = 1
8851.      C P117
8852.      ELSEIF (CND(II,JJ,KK,IM1,JP1,KP1)) THEN
8853.          MM = 1
8854.      C P118
8855.      ELSEIF (CND(II,JJ,KK,I,JP1,KP1)) THEN
8856.          MM = 1
8857.      C P119
8858.      ELSEIF (CND(II,JJ,KK,IP1,JP1,KP1)) THEN
8859.          MM = 1
8860.      C P133
8861.      ELSEIF (CND(II,JJ,KK,I,JM1,KP2)) THEN
8862.          MM = 1
8863.      C P136
8864.      ELSEIF (CND(II,JJ,KK,IM2,J,KP2)) THEN

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0054.      MM = 1
0055.      C P137
0056.          ELSEIF (CND(I1,JJ,KK,IM1,J,KP2)) THEN
0057.              MM = 1
0058.      C P138
0059.          ELSEIF (CND(I1,JJ,KK,I,J,KP2)) THEN
0060.              MM = 1
0061.      C P139
0062.          ELSEIF (CND(I1,JJ,KK,IP1,J,KP2)) THEN
0063.              MM = 1
0064.      C P143
0065.          ELSEIF (CND(I1,JJ,KK,I,JP1,KP2)) THEN
0066.              MM = 1
0067.      C P161
0068.          ELSEIF (CND(I1,JJ,KK,IM2,J,K+3)) THEN
0069.              MM = 1
0070.      C P162
0071.          ELSEIF (CND(I1,JJ,KK,IM1,J,K+3)) THEN
0072.              MM = 1
0073.      C P163
0074.          ELSEIF (CND(I1,JJ,KK,I,J,K+3)) THEN
0075.              MM = 1
0076.      C P164
0077.          ELSEIF (CND(I1,JJ,KK,IP1,J,K+3)) THEN
0078.              MM = 1
0079.          ENDIF
0080.      C
0081.          RETURN
0082.          END
0083.          SUBROUTINE R2E(J,I,K,JJ,II,KK,MM)
0084.      C      R2E.FOR
0085.      C
0086.          INCLUDE (INTROM)
0087.      C P11
0088.          IF (CND(I1,JJ,KK,IM2,J,K+3)) THEN
0089.              MM = 1
0090.      C P12
0091.          ELSEIF (CND(I1,JJ,KK,IM1,J,K+3)) THEN
0092.              MM = 1
0093.      C P13
0094.          ELSEIF (CND(I1,JJ,KK,I,J,K+3)) THEN
0095.              MM = 1
0096.      C P14
0097.          ELSEIF (CND(I1,JJ,KK,IP1,J,K+3)) THEN
0098.              MM = 1
0099.      C P33
0100.          ELSEIF (CND(I1,JJ,KK,I,JM1,KM2)) THEN
0101.              MM = 1
0102.      C P36
0103.          ELSEIF (CND(I1,JJ,KK,IM2,J,KM2)) THEN
0104.              MM = 1
0105.      C P37
0106.          ELSEIF (CND(I1,JJ,KK,IM1,J,KM2)) THEN
0107.              MM = 1
0108.      C P38
0109.          ELSEIF (CND(I1,JJ,KK,I,J,KM2)) THEN
0110.              MM = 1
0111.      C P39
0112.          ELSEIF (CND(I1,JJ,KK,IP1,J,KM2)) THEN
0113.              MM = 1
0114.      C P43
0115.          ELSEIF (CND(I1,JJ,KK,I,JP1,KM2)) THEN
0116.              MM = 1
0117.      C P58
0118.          ELSEIF (CND(I1,JJ,KK,IM2,JM1,KM1)) THEN
0119.              MM = 1
0120.      C P57
0121.          ELSEIF (CND(I1,JJ,KK,IM1,JM1,KM1)) THEN
0122.              MM = 1
0123.      C P56
0124.          ELSEIF (CND(I1,JJ,KK,I,JM1,KM1)) THEN
0125.              MM = 1
0126.      C P59
0127.          ELSEIF (CND(I1,JJ,KK,IP1,JM1,KM1)) THEN
0128.              MM = 1
0129.      C P61
0130.          ELSEIF (CND(I1,JJ,KK,IM2,J,KM1)) THEN
0131.              MM = 1
0132.      C P62
0133.          ELSEIF (CND(I1,JJ,KK,IM1,J,KM1)) THEN
0134.              MM = 1
0135.      C P63
0136.          ELSEIF (CND(I1,JJ,KK,I,J,KM1)) THEN
0137.              MM = 1
0138.      C P64
0139.          ELSEIF (CND(I1,JJ,KK,IP1,J,KM1)) THEN
0140.              MM = 1
0141.      C P68
0142.          ELSEIF (CND(I1,JJ,KK,IM2,JP1,KM1)) THEN
0143.              MM = 1
0144.      C P67
0145.          ELSEIF (CND(I1,JJ,KK,IM1,JP1,KM1)) THEN
0146.              MM = 1
0147.      C P66
0148.          ELSEIF (CND(I1,JJ,KK,I,JP1,KM1)) THEN
0149.              MM = 1
0150.      C P69
0151.          ELSEIF (CND(I1,JJ,KK,IP1,JP1,KM1)) THEN
0152.              MM = 1
0153.      C P81
0154.          ELSEIF (CND(I1,JJ,KK,IM2,JM1,K)) THEN
0155.              MM = 1
0156.      C P82
0157.          ELSEIF (CND(I1,JJ,KK,IM1,JM1,K)) THEN
0158.              MM = 1
0159.      C P83
0160.          ELSEIF (CND(I1,JJ,KK,I,JM1,K)) THEN
0161.              MM = 1
0162.      C P84
0163.          ELSEIF (CND(I1,JJ,KK,IP1,JM1,K)) THEN
0164.              MM = 1
0165.      C P86
0166.          ELSEIF (CND(I1,JJ,KK,IM2,J,K)) THEN
0167.              MM = 1
0168.      C P87
0169.          ELSEIF (CND(I1,JJ,KK,IM1,J,K)) THEN
0170.              MM = 1
0171.      C P88
0172.          ELSEIF (CND(I1,JJ,KK,I,J,K)) THEN
0173.              MM = 1
0174.      C P88
0175.          ELSEIF (CND(I1,JJ,KK,IP1,J,K)) THEN
0176.              MM = 1
0177.      C P91
0178.          ELSEIF (CND(I1,JJ,KK,IM2,JP1,K)) THEN
0179.              MM = 1
0180.      C P92
0181.          ELSEIF (CND(I1,JJ,KK,IM1,JP1,K)) THEN
0182.              MM = 1
0183.      C P93
0184.          ELSEIF (CND(I1,JJ,KK,I,JP1,K)) THEN
0185.              MM = 1

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8996. C P94
8997.     ELSEIF (CND(II,JJ,KK,IP1,JP1,K)) THEN
8998.         MM = 1
8999.     ENDIF
9000.
9001. C
9002.     RETURN
9003. END
9004. SUBROUTINE R3E(J,I,K,JJ,II,KK,MM)
9005. R3E.FOR
9006. C
9007.     INCLUDE (INTROM)
9008.
9009. C P35
9010.     IF (CND(II,JJ,KK,IM2,J,KM2)) THEN
9011.         MM = 1
9012.
9013. C P37
9014.     ELSEIF (CND(II,JJ,KK,IM1,J,KM2)) THEN
9015.         MM = 1
9016.
9017. C P38
9018.     ELSEIF (CND(II,JJ,KK,I,J,KM2)) THEN
9019.         MM = 1
9020.
9021. C P39
9022.     ELSEIF (CND(II,JJ,KK,IP1,J,KM2)) THEN
9023.         MM = 1
9024.
9025. C P56
9026.     ELSEIF (CND(II,JJ,KK,IM2,JM1,KM1)) THEN
9027.         MM = 1
9028.
9029. C P57
9030.     ELSEIF (CND(II,JJ,KK,IM1,JM1,KM1)) THEN
9031.         MM = 1
9032.
9033. C P58
9034.     ELSEIF (CND(II,JJ,KK,I,JM1,KM1)) THEN
9035.         MM = 1
9036.
9037. C P59
9038.     ELSEIF (CND(II,JJ,KK,IP1,JM1,KM1)) THEN
9039.         MM = 1
9040.
9041. C P61
9042.     ELSEIF (CND(II,JJ,KK,IM2,J,KM1)) THEN
9043.         MM = 1
9044.
9045. C P62
9046.     ELSEIF (CND(II,JJ,KK,IM1,J,KM1)) THEN
9047.         MM = 1
9048.
9049. C P63
9050.     ELSEIF (CND(II,JJ,KK,I,J,KM1)) THEN
9051.         MM = 1
9052.
9053. C P64
9054.     ELSEIF (CND(II,JJ,KK,IP1,J,KM1)) THEN
9055.         MM = 1
9056.
9057. C P66
9058.     ELSEIF (CND(II,JJ,KK,IM2,JP1,KM1)) THEN
9059.         MM = 1
9060.
9061. C P67
9062.     ELSEIF (CND(II,JJ,KK,IM1,JP1,KM1)) THEN
9063.         MM = 1
9064.
9065. C P68
9066.     ELSEIF (CND(II,JJ,KK,I,JP1,KM1)) THEN
9067.         MM = 1
9068.
9069. C P69
9070.     ELSEIF (CND(II,JJ,KK,IP1,JP1,KM1)) THEN
9071.         MM = 1
9072.
9073. C P81
9074.     ELSEIF (CND(II,JJ,KK,IM2,JM1,K)) THEN
9075.         MM = 1
9076.
9077. C P82
9078.     ELSEIF (CND(II,JJ,KK,IM1,JM1,K)) THEN
9079.         MM = 1
9080.
9081. C P83
9082.     ELSEIF (CND(II,JJ,KK,I,JM1,K)) THEN
9083.         MM = 1
9084.
9085. C P84
9086.     ELSEIF (CND(II,JJ,KK,IP1,JM1,K)) THEN
9087.         MM = 1
9088.
9089. C P86
9090.     ELSEIF (CND(II,JJ,KK,IM2,J,K)) THEN
9091.         MM = 1
9092.
9093. C P87
9094.     ELSEIF (CND(II,JJ,KK,IM1,J,K)) THEN
9095.         MM = 1
9096.
9097. C P88
9098.     ELSEIF (CND(II,JJ,KK,I,J,K)) THEN
9099.         MM = 1
9100.
9101. C P89
9102.     ELSEIF (CND(II,JJ,KK,IP1,J,K)) THEN
9103.         MM = 1
9104.
9105. C P91
9106.     ELSEIF (CND(II,JJ,KK,IM2,JP1,K)) THEN
9107.         MM = 1
9108.
9109. C P92
9110.     ELSEIF (CND(II,JJ,KK,IM1,JP1,K)) THEN
9111.         MM = 1
9112.
9113. C P93
9114.     ELSEIF (CND(II,JJ,KK,I,JP1,K)) THEN
9115.         MM = 1
9116.
9117. C P94
9118.     ELSEIF (CND(II,JJ,KK,IP1,JP1,K)) THEN
9119.         MM = 1
9120.
9121. C P111
9122.     ELSEIF (CND(II,JJ,KK,IM2,J,KP1)) THEN
9123.         MM = 1
9124.
9125. C P112
9126.     ELSEIF (CND(II,JJ,KK,IM1,J,KP1)) THEN
9127.         MM = 1
9128.
9129. C P113
9130.     ELSEIF (CND(II,JJ,KK,I,J,KP1)) THEN
9131.         MM = 1
9132.
9133. C P114
9134.     ELSEIF (CND(II,JJ,KK,IP1,J,KP1)) THEN
9135.         MM = 1
9136.
9137. C P162
9138.     ELSEIF (CND(II,JJ,KK,ITE,J,KLOW-2)) THEN
9139.         MM = 1
9140.
9141. C P163
9142.     ELSEIF (CND(II,JJ,KK,ITE,J,KLOW-1)) THEN
9143.         MM = 1
9144.
9145. C P164
9146.     ELSEIF (CND(II,JJ,KK,ITE,J,KLOW)) THEN
9147.         MM = 1
9148.
9149. C P165
9150.     ELSEIF (CND(II,JJ,KK,ITE,J,KUP)) THEN
9151.         MM = 1
9152.
9153. C P166
9154.     ELSEIF (CND(II,JJ,KK,ITE,J,KUP+1)) THEN
9155.         MM = 1
9156.
9157. C P167
9158.     ELSEIF (CND(II,JJ,KK,ITE,J,KUP+2)) THEN
9159.         MM = 1
9160.
9161. ENDIF
9162.
9163. C
9164.     RETURN
9165. END
9166. SUBROUTINE R4E(J,I,K,JJ,II,KK,MM)
9167. R4E.FOR
9168. C

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7128. INCLUDE (INTROM)
7129.
7130. C P81 IF (CND(II,JJ,KK,IM2,J,KM1)) THEN
7131. MM = 1
7132.
7133. C P82 ELSEIF (CND(II,JJ,KK,IM1,J,KM1)) THEN
7134. MM = 1
7135.
7136. C P83 ELSEIF (CND(II,JJ,KK,I,J,KM1)) THEN
7137. MM = 1
7138.
7139. C P84 ELSEIF (CND(II,JJ,KK,IP1,J,KM1)) THEN
7140. MM = 1
7141.
7142. C P81 ELSEIF (CND(II,JJ,KK,IM2,JM1,K)) THEN
7143. MM = 1
7144.
7145. C P82 ELSEIF (CND(II,JJ,KK,IM1,JM1,K)) THEN
7146. MM = 1
7147.
7148. C P83 ELSEIF (CND(II,JJ,KK,I,JM1,K)) THEN
7149. MM = 1
7150.
7151. C P84 ELSEIF (CND(II,JJ,KK,IP1,JM1,K)) THEN
7152. MM = 1
7153.
7154. C P85 ELSEIF (CND(II,JJ,KK,IM2,J,K)) THEN
7155. MM = 1
7156.
7157. C P87 ELSEIF (CND(II,JJ,KK,IM1,J,K)) THEN
7158. MM = 1
7159.
7160. C P88 ELSEIF (CND(II,JJ,KK,I,J,K)) THEN
7161. MM = 1
7162.
7163. C P89 ELSEIF (CND(II,JJ,KK,IP1,J,K)) THEN
7164. MM = 1
7165.
7166. C P91 ELSEIF (CND(II,JJ,KK,IM2,JP1,K)) THEN
7167. MM = 1
7168.
7169. C P92 ELSEIF (CND(II,JJ,KK,IM1,JP1,K)) THEN
7170. MM = 1
7171.
7172. C P93 ELSEIF (CND(II,JJ,KK,I,JP1,K)) THEN
7173. MM = 1
7174.
7175. C P94 ELSEIF (CND(II,JJ,KK,IP1,JP1,K)) THEN
7176. MM = 1
7177.
7178. C P106 ELSEIF (CND(II,JJ,KK,IM2,JM1,KP1)) THEN
7179. MM = 1
7180.
7181. C P107 ELSEIF (CND(II,JJ,KK,IM1,JM1,KP1)) THEN
7182. MM = 1
7183.
7184. C P108 ELSEIF (CND(II,JJ,KK,I,JM1,KP1)) THEN
7185. MM = 1
7186.
7187. C P109 ELSEIF (CND(II,JJ,KK,IP1,JM1,KP1)) THEN
7188. MM = 1
7189.
7190. C P111 ELSEIF (CND(II,JJ,KK,IM2,J,KP1)) THEN
7191. MM = 1
7192.
7193. C P112 ELSEIF (CND(II,JJ,KK,IM1,J,KP1)) THEN
7194. MM = 1
7195.
7196. C P113 ELSEIF (CND(II,JJ,KK,I,J,KP1)) THEN
7197. MM = 1
7198.
7199. C P114 ELSEIF (CND(II,JJ,KK,IP1,J,KP1)) THEN
7200. MM = 1
7201.
7202. C P116 ELSEIF (CND(II,JJ,KK,IM2,JP1,KP1)) THEN
7203. MM = 1
7204.
7205. C P117 ELSEIF (CND(II,JJ,KK,IM1,JP1,KP1)) THEN
7206. MM = 1
7207.
7208. C P118 ELSEIF (CND(II,JJ,KK,I,JP1,KP1)) THEN
7209. MM = 1
7210.
7211. C P119 ELSEIF (CND(II,JJ,KK,IP1,JP1,KP1)) THEN
7212. MM = 1
7213.
7214. C P136 ELSEIF (CND(II,JJ,KK,IM2,J,KP2)) THEN
7215. MM = 1
7216.
7217. C P137 ELSEIF (CND(II,JJ,KK,IM1,J,KP2)) THEN
7218. MM = 1
7219.
7220. C P138 ELSEIF (CND(II,JJ,KK,I,J,KP2)) THEN
7221. MM = 1
7222.
7223. C P139 ELSEIF (CND(II,JJ,KK,IP1,J,KP2)) THEN
7224. MM = 1
7225.
7226. C P182 ELSEIF (CND(II,JJ,KK,ITE,J,KLOW-2)) THEN
7227. MM = 1
7228.
7229. C P183 ELSEIF (CND(II,JJ,KK,ITE,J,KLOW-1)) THEN
7230. MM = 1
7231.
7232. C P184 ELSEIF (CND(II,JJ,KK,ITE,J,KLOW)) THEN
7233. MM = 1
7234.
7235. C P185 ELSEIF (CND(II,JJ,KK,ITE,J,KUP)) THEN
7236. MM = 1
7237.
7238. C P186 ELSEIF (CND(II,JJ,KK,ITE,J,KUP+1)) THEN
7239. MM = 1
7240.
7241. C P187 ELSEIF (CND(II,JJ,KK,ITE,J,KUP+2)) THEN
7242. MM = 1
7243.
7244. C
7245. RETURN
7246. END

```

APPENDIX D

MACSYMA CODE TO FIND THE SENSITIVITY
OF THE PRESSURE COEFFICIENT WITH RESPECT TO
THE DESIGN VARIABLES


```

/*-----*/
/* RC.MAC : SENSITIVITY OF CP W.R.T. XD'S */
/* DESIGN VARIABLES : [XD1, XD2, XD3, XD4, XD5] = [MACH, AQAR, T, C, L] */
/*-----*/
( SHOWTIME : TRUE, ROINF : (1+G1*QINF#2) * G2 )$

FU (I,J) := CC1*P(J,K,I) + S*CC2*P(J,K+1,I) + CC3*P(J,K+2,I)$
FXU() := TAI1*(FU(I,J)+S*FU(I-1,J)) + TAI2*(FU(I+1,J)+S*FU(I,J))
        + QXINF*XIXXI(J,I)$
FYU() := TAU1*(FU(I,J)+S*FU(I,J-1)) + TAU2*(FU(I,J+1)+S*FU(I,J))
        - QXINF*XIXXI(J,I)*XIYX(J,I)$
UU () := (XIXX(J,I)*2+XIYX(J,I)*2)*FXU() + XIYX(J,I)*FYU()$
VU () := XIYX(J,I)*FXU() + FYU()$
DPU() := UU()*DDZXU + VU()*DDZYU$

FL (I,J) := CC4*P(J,K,I) + S*CC5*P(J,K-1,I) + CC6*P(J,K-2,I)$
FXL() := TAI1*(FL(I,J)+S*FL(I-1,J)) + TAI2*(FL(I+1,J)+S*FL(I,J))
        + QXINF*XIXXI(J,I)$
FYL() := TAU1*(FL(I,J)+S*FL(I,J-1)) + TAU2*(FL(I,J+1)+S*FL(I,J))
        - QXINF*XIXXI(J,I)*XIYX(J,I)$
UL () := (XIXX(J,I)*2+XIYX(J,I)*2)*FXL() + XIYX(J,I)*FYL()$
VL () := XIYX(J,I)*FXL() + FYL()$
DPLO() := UL()*DDZXL + VL()*DDZYL$

RHOU() := (1+G1*(UU()*FXU()+VU()*FYU()+DPU()*2)) * G2$
RHOL() := (1+G1*(UL()*FXL()+VL()*FYL()+DPLO()*2)) * G2$

CPU () := G7 * (RHOU()*G8-ROINF*G8) / (ROINF*QINF#2)$
CPL () := G7 * (RHOL()*G8-ROINF*G8) / (ROINF*QINF#2)$
/*-----*/
RTTU:
[P(J-1,K ,I)=P83 ,P(J ,K ,I-1)=P87 ,P(J ,K ,I )=P88 ,P(J ,K ,I+1)=P89 ,
 P(J+1,K ,I)=P93 ,P(J-1,K+1,I )=P108,P(J ,K+1,I-1)=P112,P(J ,K+1,I )=P113,
 P(J,K+1,I+1)=P114,P(J+1,K+1,I )=P118,P(J-1,K+2,I )=P133,P(J ,K+2,I-1)=P137,
 P(J,K+2,I )=P138,P(J ,K+2,I+1)=P139,P(J-1,K+2,I )=P143]$
RTTL:
[P(J-1,K-2,I)=P33 ,P(J ,K-2,I-1)=P37 ,P(J ,K-2,I )=P38 ,P(J ,K-2,I+1)=P39 ,
 P(J+1,K-2,I)=P43 ,P(J-1,K-1,I )=P58 ,P(J ,K-1,I-1)=P62 ,P(J ,K-1,I )=P63 ,
 P(J,K-1,I+1)=P64 ,P(J+1,K-1,I )=P68 ,P(J-1,K ,I )=P83 ,P(J ,K ,I-1)=P87 ,
 P(J,K ,I )=P88 ,P(J ,K ,I+1)=P89 ,P(J+1,K ,I )=P93]$

SDPU : [P83,P87,P88,P89,P93,P108,P112,P113,P114,P118,P133,P137,P138,P139,P143]$
SDPLO: [P33,P37,P38,P39,P43,P58,P62,P63,P64,P68,P83,P87,P88,P89,P93]$
LUKI : [J-2=JM2, J-1=JM1, J+1=JP1, J+2=JP2, I-2=IM2, I-1=IM1, I+1=IP1, I+2=IP2]$
/*-----*/
(CPU : SUBST(RTTU,CPU()), CPL : SUBST(RTTL,CPL()))$

( MATCHDECLARE([DIFF,A,B],TRUE), TELLSIMP('DIFF(A,B),CONCAT(A,B)) )$
( SDES:[XD1,XD2,XD3,XD4,XD5], SDES1:[XD1,XD2], SDES2:[XD3,XD4,XD5] )$
DEPENDS([QXINF,QZINF],SDES1,[DOZXU,DDZYU,DCZXL,DDZYL],SDES2,QINF,XD1)$

DEPENDS(SDPU,SDES1,SDPLO,SDES1)$
FOR M:1 THRU LENGTH(SDES1) DO ( DCPU[M]: DIFF(CPU,SDES1[M]),
                                DCPL[M]: DIFF(CPL,SDES1[M]) )$
(REMOVE(SDPU,DEPENDENCY), REMOVE(SDPLO,DEPENDENCY), KILL(RULES))$

FOR L:1 THRU LENGTH(RTTU) DO ( RTTU[L]: SUBST(LUKI,RTTU[L]) )$
FOR L:1 THRU LENGTH(RTTL) DO ( RTTL[L]: SUBST(LUKI,RTTL[L]) )$
/*-----*/
TITLET(ST1,ST2,ST3) := ( GENTRAN(LITERAL(TAB,EVAL(ST1),CR)),
  GENTRAN(LITERAL("C",TAB,EVAL(ST2),CR,"C",CR,TAB,EVAL(ST3),CR)) )$
TITLEB() := GENTRAN(LITERAL("C",CR,TAB,"RETURN",CR,TAB,"END",CR))$
TITLE1(LNR,RTT) := ( GENTRAN(LITERAL("C",CR,"C",TAB,"P,PXD",CR,"C",CR)),
  FOR L:1 THRU LNR DO
    GENTRAN(LITERAL(TAB,EVAL(RHS(RTT[L])), " = ",EVAL(LHS(RTT[L])),CR)) )$
TITLE4(ST1,RTTT,DRD) := GENTRAN(LRSETQ(EVAL(CONCAT(ST1,RTTT),DRD))$
SUBRCX(ST1,ST2,ST3,M) := ( TITLET(ST1,ST2,ST3),
  GENTRAN(LITERAL(TAB,"K = KUP",CR)), TITLE1(LENGTH(RTTU),RTTU),
  FOR L:1 THRU LENGTH(RTTU) DO ( PNN: RHS(RTTU[L]), RTT: LHS(RTTU[L]),
    GENTRAN(LITERAL(TAB,EVAL(PNN),EVAL(SDES[M]), " = P",EVAL(RTT),CR)) ),
  GENTRAN(LITERAL("C",CR,"C",TAB,"DCPU",CR)), TITLE4("CPU",SDES[M],DCPU[M]),
  GENTRAN(LITERAL(TAB,"K = KLOW",CR)), TITLE1(LENGTH(RTTL),RTTL),
  FOR L:1 THRU LENGTH(RTTL) DO ( PNN: RHS(RTTL[L]), RTT: LHS(RTTL[L]),
    GENTRAN(LITERAL(TAB,EVAL(PNN),EVAL(SDES[M]), " = P",EVAL(RTT),CR)) ),
  GENTRAN(LITERAL("C",CR,"C",TAB,"DCPL",CR)), TITLE4("CPL",SDES[M],DCPL[M]),
  /*-----*/ TITLEB() )$
(GENTRANOUT("RC.FOR"), GENTRANOPT: TRUE)$
SUBRCX("SUBROUTINE RCXD1(J,I,CPUXD1,CPLXD1)","RCXD1.FOR","INCLUDE (INTROX)",1)$
SUBRCX("SUBROUTINE RCXD2(J,I,CPUXD2,CPLXD2)","RCXD2.FOR","INCLUDE (INTROX)",2)$
/*-----*/

```

```

1 SUBROUTINE RCXD1(J,I,CPUXD1,CPLXD1)
2 RCXD1 FOR
3
4 INCLUDE (INTROX)
5 K = KUP
6
7 CC
8 P, PXD
9
10 P83 = P(JM1,K,I)
11 P87 = P(J,K,IM1)
12 P88 = P(J,K,I)
13 P89 = P(J,K,IP1)
14 P93 = P(JP1,K,I)
15 P108 = P(JM1,K+1,I)
16 P112 = P(J,K+1,IM1)
17 P113 = P(J,K+1,I)
18 P114 = P(J,K+1,IP1)
19 P118 = P(JP1,K+1,I)
20 P133 = P(JM1,K+2,I)
21 P137 = P(J,K+2,IM1)
22 P138 = P(J,K+2,I)
23 P139 = P(J,K+2,IP1)
24 P143 = P(JP1,K+2,I)
25 P83XD1 = PP(JM1,K,I)
26 P87XD1 = PP(J,K,IM1)
27 P88XD1 = PP(J,K,I)
28 P89XD1 = PP(J,K,IP1)
29 P93XD1 = PP(JP1,K,I)
30 P108XD1 = PP(JM1,K+1,I)
31 P112XD1 = PP(J,K+1,IM1)
32 P113XD1 = PP(J,K+1,I)
33 P114XD1 = PP(J,K+1,IP1)
34 P118XD1 = PP(JP1,K+1,I)
35 P133XD1 = PP(JM1,K+2,I)
36 P137XD1 = PP(J,K+2,IM1)
37 P138XD1 = PP(J,K+2,I)
38 P139XD1 = PP(J,K+2,IP1)
39 P143XD1 = PP(JP1,K+2,I)
40
41 CC
42 DCPU
43 T0=QINF**2
44 T1=G1+T0+1
45 T2=T1**G2
46 T3=T2**G8
47 T4=XIXX(J,I)
48 T5=XIYX(J,I)
49 T6=-(T4+T5+QXINF)
50 T7=CC3+P138
51 T8=CC1+P88
52 T9=CC2+P113+S
53 T10=(S*(CC2+P108+S+CC1+P83+CC3+P133)+T9+T8+T7)*TAU1
54 T11=S*(T9+T8+T7)
55 T12=(T11+CC2+P118+S+CC1+P93+CC3+P143)*TAU2
56 T13=T12+T10+T8
57 T14=(T11+CC2+P114+S+CC1+P89+CC3+P139)*TAI2*(S*(CC2+P112+S+CC1+P87+
58 CC3+P137)+T9+T8+T7)+TAI1+T4+QXINF
59 T15=T12+T10+T5+T14+T8
60 T16=T5**2+XIXX(J,I)**2
61 T17=T5+T13+T16+T14
62 T18=DDZXU+T17+DDZYU+T15
63 T19=G1*(T18**2+T14+T17+T13+T15)+1
64 T20=T19**G2**G8
65 T21=T20-T3
66 T22=1/T2
67 T23=-(T4+T5+QXINFXD1)
68 T24=CC3+P138XD1
69 T25=CC1+P88XD1
70 T26=CC2+P113XD1+S
71 T27=(S*(CC2+P108XD1+S+CC1+P83XD1+CC3+P133XD1)+T26+T25+T24)*TAU1
72 T28=S*(T26+T25+T24)
73 T29=(T26+CC2+P118XD1+S+CC1+P93XD1+CC3+P143XD1)*TAU2
74 T30=T29+T27+T23
75 T31=(T26+CC2+P114XD1+S+CC1+P89XD1+CC3+P139XD1)*TAI2*(S*(CC2+
76 P112XD1+S+CC1+P87XD1+CC3+P137XD1)+T26+T25+T24)+TAI1+T4+QXINFXD1
77 T32=T28+T27+T5+T31+T23
78 T33=T5+T30+T16+T31
79 CUXD1=G7+T22*(G1+G2+G8*(2-T16*(DDZXU+T33+DDZYU+T32)+T14+T33+T31+
80 T17+T13+T32+T15+T30)+T20/T19-(2*G1+G2+G8+QINF+T3=QINFXD1/T11)/T0-
81 (2*G7+T22*QINFXD1+T21/QINF**3)-(2*G1+G2+G7+T1=-(G2-1)*QINFXD1=
82 T21/QINF)
83 K = KLOW
84
85 CC
86 P, PXD
87
88 P33 = P(JM1,K-2,I)
89 P37 = P(J,K-2,IM1)
90 P38 = P(J,K-2,I)
91 P39 = P(J,K-2,IP1)
92 P43 = P(JP1,K-2,I)
93 P58 = P(JM1,K-1,I)
94 P62 = P(J,K-1,IM1)
95 P63 = P(J,K-1,I)
96 P64 = P(J,K-1,IP1)
97 P68 = P(JP1,K-1,I)
98 P83 = P(JM1,K,I)
99 P87 = P(J,K,IM1)
100 P88 = P(J,K,I)
101 P89 = P(J,K,IP1)
102 P93 = P(JP1,K,I)
103 P33XD1 = PP(JM1,K-2,I)
104 P37XD1 = PP(J,K-2,IM1)
105 P38XD1 = PP(J,K-2,I)
106 P39XD1 = PP(J,K-2,IP1)
107 P43XD1 = PP(JP1,K-2,I)
108 P58XD1 = PP(JM1,K-1,I)
109 P62XD1 = PP(J,K-1,IM1)
110 P63XD1 = PP(J,K-1,I)
111 P64XD1 = PP(J,K-1,IP1)
112 P68XD1 = PP(JP1,K-1,I)
113 P83XD1 = PP(JM1,K,I)
114 P87XD1 = PP(J,K,IM1)
115 P88XD1 = PP(J,K,I)
116 P89XD1 = PP(J,K,IP1)
117 P93XD1 = PP(JP1,K,I)
118
119 CC
120 DCPL
121 T0=QINF**2
122 T1=G1+T0+1
123 T2=T1**G2
124 T3=T2**G8
125 T4=XIXX(J,I)
126 T5=XIYX(J,I)
127 T6=-(T4+T5+QXINF)
128 T7=CC6+P38
129 T8=CC4+P88
130 T9=CC5+P63+S
131 T10=(S*(CC5+P58+S+CC4+P83+CC6+P33)+T9+T8+T7)*TAU1
132 T11=S*(T9+T8+T7)
133 T12=(T11+CC5+P68+S+CC4+P93+CC6+P43)*TAU2
134 T13=T12+T10+T8
135 T14=(T11+CC5+P64+S+CC4+P89+CC6+P39)*TAI2*(S*(CC5+P62+S+CC4+P87+CC6

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13 *P37 = T3+T8+T7)+TA11+T4*QINF
14 T15=T12+T10+T5+T14+T6
15 T16=T5+2+X1X(J,I)**2
16 T17=T5+T13+T16+T14
17 T18=DDZXL+T17+DDZYL+T15
18 T19=CI+(T18+2+T14+T17+T13+T15)+1
19 T20=T19+G2+G8
20 T21=T20-T3
21 T22=1/T2
22 T23=-(T4+T5+QINF*XD1)
23 T24=CC6+P33XD1
24 T25=CC4+P88XD1
25 T26=CC5+P83XD1+S
26 T27=(S+(CC5+P58XD1+S+CC4+P83XD1+CC6+P33XD1)+T26+T25+T24)=TAJ1
27 T28=S+(T26+T25+T24)
28 T29=(T28+CC5+P58XD1+S+CC4+P83XD1+CC6+P33XD1)=TAJ2
29 T30=T29+T27+T23
30 T31=(T28+CC5+P58XD1+S+CC4+P88XD1+CC6+P33XD1)=TAI2+(S+(CC5+P82XD1+S
31 +CC4+P87XD1+CC6+P37XD1)+T26+T25+T24)=TAI1+T4*QINF*XD1
32 T32=T29+T27+T5+T31+T23
33 T33=T5+T30+T16+T31
34 CPLXD1=G7+T22*(G1+G2+G8+(2+T18+(DDZXL+T33+DDZYL+T32)+T14+T33+T31+
35 T17+T13+T32+T15+T30)+T20/T19-(2+G1+G2+G8+QINF+T3+QINF*XD1/T1))/TO-
36 (2+G7+T22+QINF*XD1+T21/QINF**3)-(2+G1+G2+G7+T1)=(-G2-1)*QINF*XD1+
37 T21/QINF)
38
39 C
40 RETURN
41 END
42 SUBROUTINE RCXD2(J,I,CPUXD2,CPLXD2)
43 RCXD2.FOR
44
45 C
46 INCLUDE [INTROX]
47 K = KUP
48
49 C
50 C
51 C
52 P,PXD
53
54 P83 = P(JM1,K,I)
55 P87 = P(J,K,IM1)
56 P88 = P(J,K,I)
57 P89 = P(J,K,IP1)
58 P93 = P(JP1,K,I)
59 P108 = P(JM1,K+1,I)
60 P112 = P(J,K+1,IM1)
61 P113 = P(J,K+1,I)
62 P114 = P(J,K+1,IP1)
63 P118 = P(JP1,K+1,I)
64 P132 = P(JM1,K+2,I)
65 P137 = P(J,K+2,IM1)
66 P138 = P(J,K+2,I)
67 P139 = P(J,K+2,IP1)
68 P143 = P(JP1,K+2,I)
69 P83XD2 = PP(JM1,K,I)
70 P87XD2 = PP(J,K,IM1)
71 P88XD2 = PP(J,K,I)
72 P89XD2 = PP(J,K,IP1)
73 P93XD2 = PP(JP1,K,I)
74 P108XD2 = PP(JM1,K+1,I)
75 P112XD2 = PP(J,K+1,IM1)
76 P113XD2 = PP(J,K+1,I)
77 P114XD2 = PP(J,K+1,IP1)
78 P118XD2 = PP(JP1,K+1,I)
79 P132XD2 = PP(JM1,K+2,I)
80 P137XD2 = PP(J,K+2,IM1)
81 P138XD2 = PP(J,K+2,I)
82 P139XD2 = PP(J,K+2,IP1)
83 P143XD2 = PP(JP1,K+2,I)
84
85 C
86 C
87 DCPU
88 TO=QINF**2
89 T1=X1XXI(J,I)
90 T2=X1YX(J,I)
91 T3=-(T1+T2+QINF)
92 T4=CC3+P138
93 T5=CC1+P88
94 T6=CC2+P113+S
95 T7=S+(T6+T5+T4)
96 T8=(T7+CC2+P114+S+CC1+P89+CC3+P139)=TAI2+(S+(CC2+P112+S+CC1+P87+
97 CC3+P137)+T6+T5+T4)=TAI1+T1*QINF
98 T9=(S+(CC2+P108+S+CC1+P83+CC3+P133)+T6+T5+T4)=TAJ1
99 T10=(T7+CC2+P118+S+CC1+P93+CC3+P143)=TAJ2
100 T11=T10+T9+T2+T8+T3
101 T12=-(T1+T2+QINF*XD2)
102 T13=CC3+P138XD2
103 T14=CC1+P88XD2
104 T15=CC2+P113XD2+S
105 T16=(S+(CC2+P108XD2+S+CC1+P83XD2+CC3+P133XD2)+T15+T14+T13)=TAJ1
106 T17=S+(T15+T14+T13)
107 T18=(T17+CC2+P118XD2+S+CC1+P93XD2+CC3+P143XD2)=TAJ2
108 T19=T18+T16+T12
109 T20=T10+T9+T3
110 T21=(T17+CC2+P114XD2+S+CC1+P89XD2+CC3+P139XD2)=TAI2+(S+(CC2+
111 P112XD2+S+CC1+P87XD2+CC3+P137XD2)+T15+T14+T13)=TAI1+T1*QINF*XD2
112 T22=T18+T16+T2+T21+T12
113 T23=T2+2+X1XX(J,I)**2
114 T24=T2+T20+T23+T8
115 T25=T2+T19+T23+T21
116 T26=DDZXU+T24+DDZYU+T11
117 T27=G1+(T26+2+T8+T24+T20+T11)+1
118 CPUXD2=G1+G2+G7+G8=(2+T26+(DDZXU+T25+DDZYU+T22)+T8+T25+T21+T24+T20
119 +T22+T11+T19)=T27+G2+G8/TO/(G1+TO+1)=G2/T27
120 K = KLOW
121
122 C
123 C
124 C
125 P,PXD
126
127 P33 = P(JM1,K-2,I)
128 P37 = P(J,K-2,IM1)
129 P38 = P(J,K-2,I)
130 P39 = P(J,K-2,IP1)
131 P43 = P(JP1,K-2,I)
132 P58 = P(JM1,K-1,I)
133 P62 = P(J,K-1,IM1)
134 P63 = P(J,K-1,I)
135 P64 = P(J,K-1,IP1)
136 P68 = P(JP1,K-1,I)
137 P83 = P(JM1,K,I)
138 P87 = P(J,K,IM1)
139 P88 = P(J,K,I)
140 P89 = P(J,K,IP1)
141 P93 = P(JP1,K,I)
142 P33XD2 = PP(JM1,K-2,I)
143 P37XD2 = PP(J,K-2,IM1)
144 P38XD2 = PP(J,K-2,I)
145 P39XD2 = PP(J,K-2,IP1)
146 P43XD2 = PP(JP1,K-2,I)
147 P58XD2 = PP(JM1,K-1,I)
148 P62XD2 = PP(J,K-1,IM1)
149 P63XD2 = PP(J,K-1,I)
150 P64XD2 = PP(J,K-1,IP1)
151 P68XD2 = PP(JP1,K-1,I)
152 P83XD2 = PP(JM1,K,I)
153 P87XD2 = PP(J,K,IM1)
154 P88XD2 = PP(J,K,I)

```

```

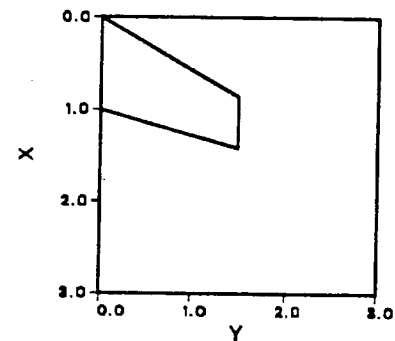
264.      P89X02 = PP(J,K,[P])
265.      P93X02 = PP(JP1,K,[I])
266.
267.      C
268.      C
269.      DCPL
270.      TO=O[NF]**2
271.      T1=X[XX](J,I)
272.      T2=X[XY](J,I)
273.      T3=-(T1+T2-OX[NF])
274.      T4=CC6+P38
275.      T5=CC4+P88
276.      T6=CC5+P83+S
277.      T7=S*(T6-T5+T4)
278.      T8=(T7+CC5+P84+S+CC4+P89+CC6+P39)*TAI2*(S*(CC5+P82+S+CC4+P87+CC6+
279.      P37)+T8-T5+T4)=TAI1+T1+OX[NF]
280.      T9=(S*(CC5+P88+S+CC4+P83+CC6+P33)+T8+T5+T4)=TAJ1
281.      T10=(T7+CC5+P88+S+CC4+P83+CC6+P43)=TAJ2
282.      T11=T10+T9+T2+T8+T3
283.      T12=-(T1+T2+OX[INF]X02)
284.      T13=CC6+P38X02
285.      T14=CC4+P88X02
286.      T15=CC5+P83X02+S
287.      T16=(S*(CC5+P84X02+S+CC4+P83X02+CC6+P33X02)+T15+T14+T13)=TAJ1
288.      T17=S*(T15+T14+T13)
289.      T18=(T17+CC5+P88X02+S+CC4+P93X02+CC6+P43X02)=TAJ2
290.      T19=T18+T16+T12
291.      T20=T10+T9+T3
292.      T21=(T17+CC5+P84X02+S+CC4+P89X02+CC6+P39X02)*TAI2*(S*(CC5+P82X02+S
293.      +CC4+P87X02+CC6+P37X02)+T15+T14+T13)=TAI1+T1+OX[INF]X02
294.      T22=T18+T16+T2+T21+T12
295.      T23=T2**2+X[XX](J,I)**2
296.      T24=T2+T20+T23+T8
297.      T25=T2+T19+T23+T21
298.      T26=DDZXL=T24+DDZYL=T11
299.      T27=G1=(T28**2+T8+T24+T20+T11)+1
300.      CPLX02=G1+G2+G7+G8=(2+T28*(DDZXL+T25+DDZYL+T22)+T8+T25+T21+T24+T20
301.      +T22+T11+T19)+T27+G2+G8/TO/(G1+TO+1)**G2/T27
302.      C
303.      RETURN
304.      END

```

ORIGINAL PAGE IS
OF POOR QUALITY

WING PLANFORM :

ONERA M6



ROOT CHORD	1.00	ASPECT RATIO	3.80
TIP CHORD	0.56	TAPER RATIO	0.56
MEAN CHORD	0.80	SEMI SPAN	1.48
AREA	1.16	L.E. SWEEP	30.00
REF. AREA	1.16	T.E. SWEEP	15.76
REF. CHORD	0.80	ROOT TWIST	0.00
REF. MOMENT	0.25	TIP TWIST	0.00

MEDIUM GRID 45 30 16

PARABOLIC-ARC SECTION

MACH NUMBER	0.80
ANGLE OF ATTACK	0.00
AIRFOIL MAX THICKNESS	0.06
AIRFOIL MAX CAMBER	0.00
LOCATION OF MAX CAMBER	0.40

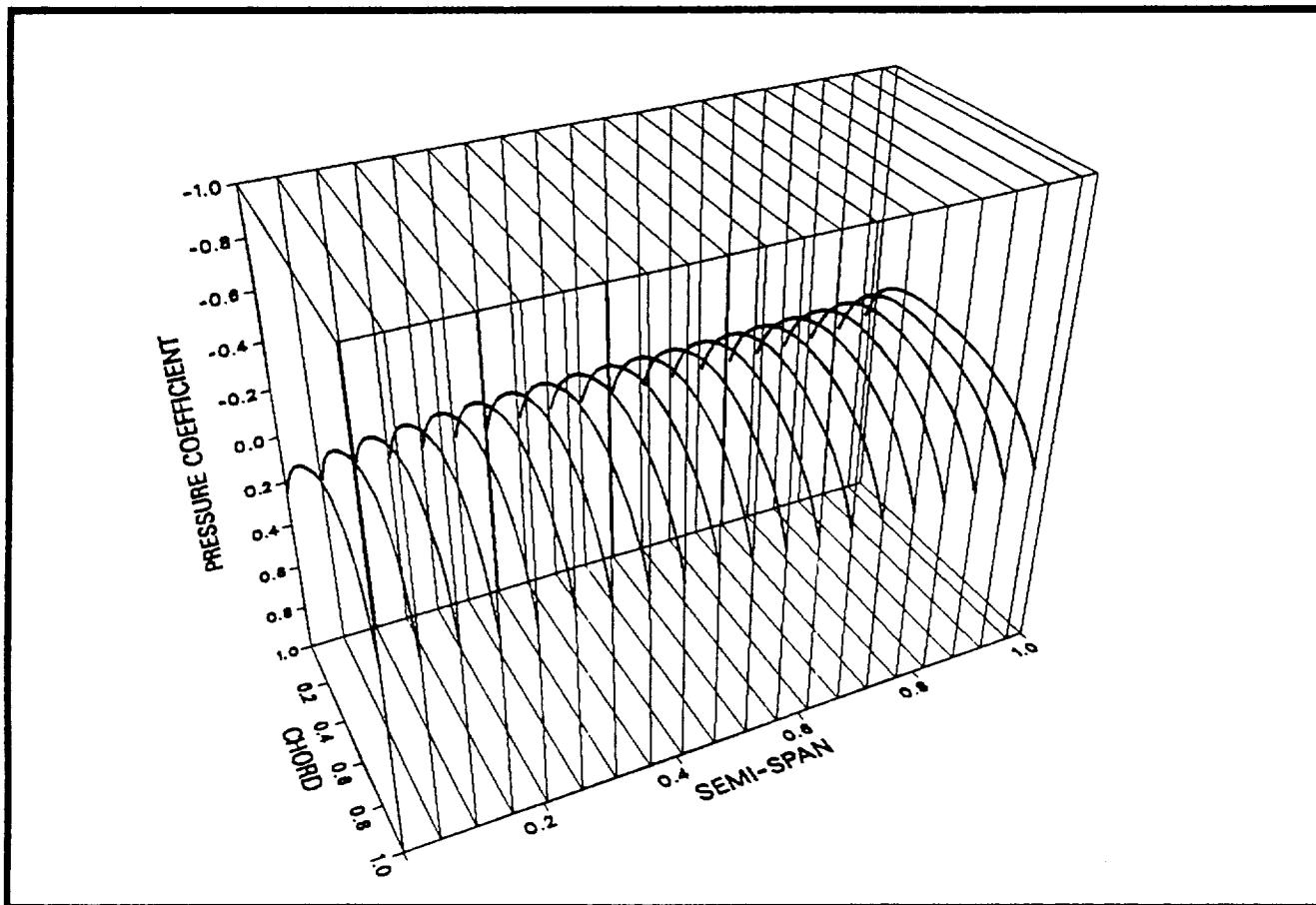


Figure (1)

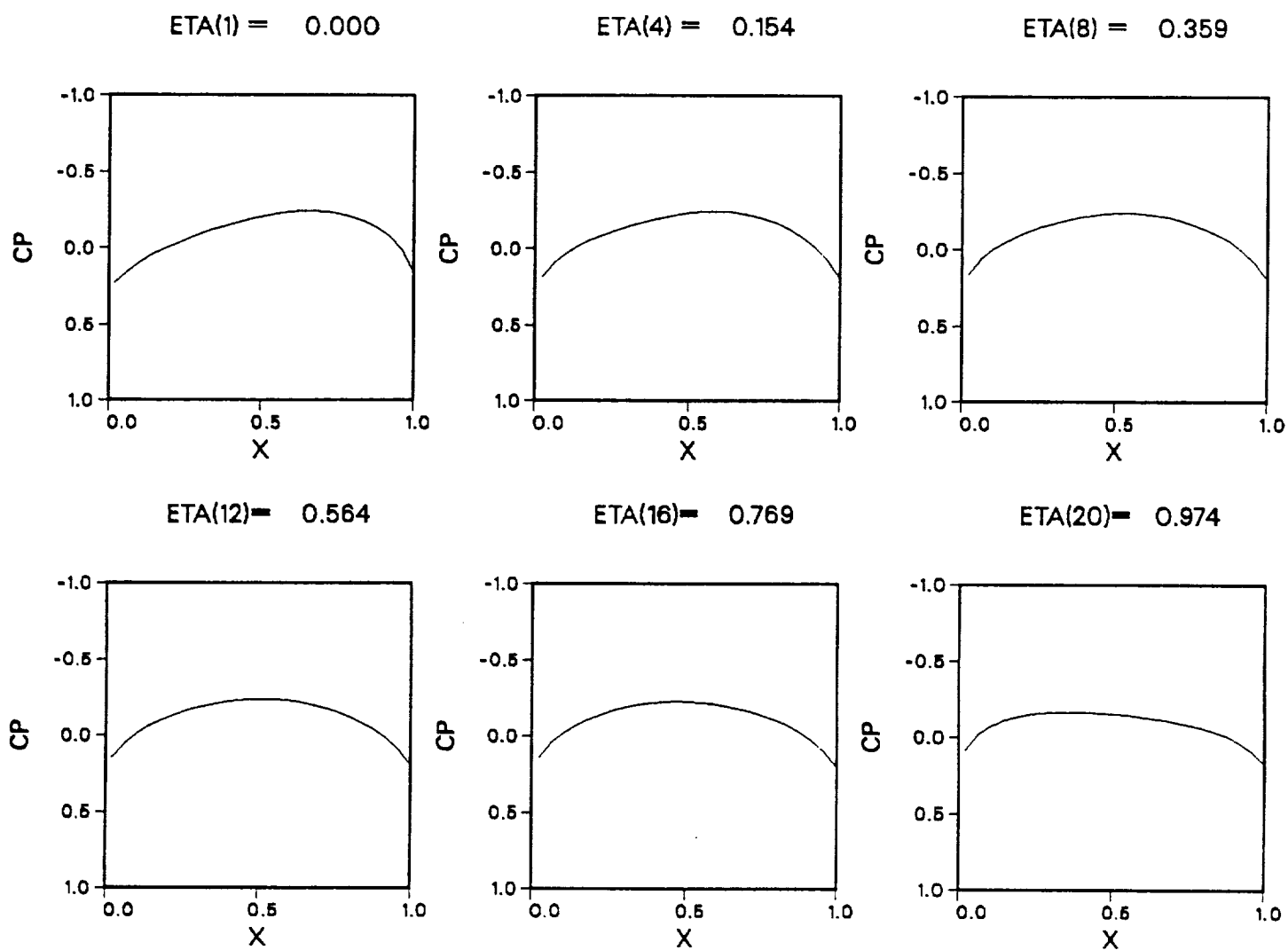


Figure (2)

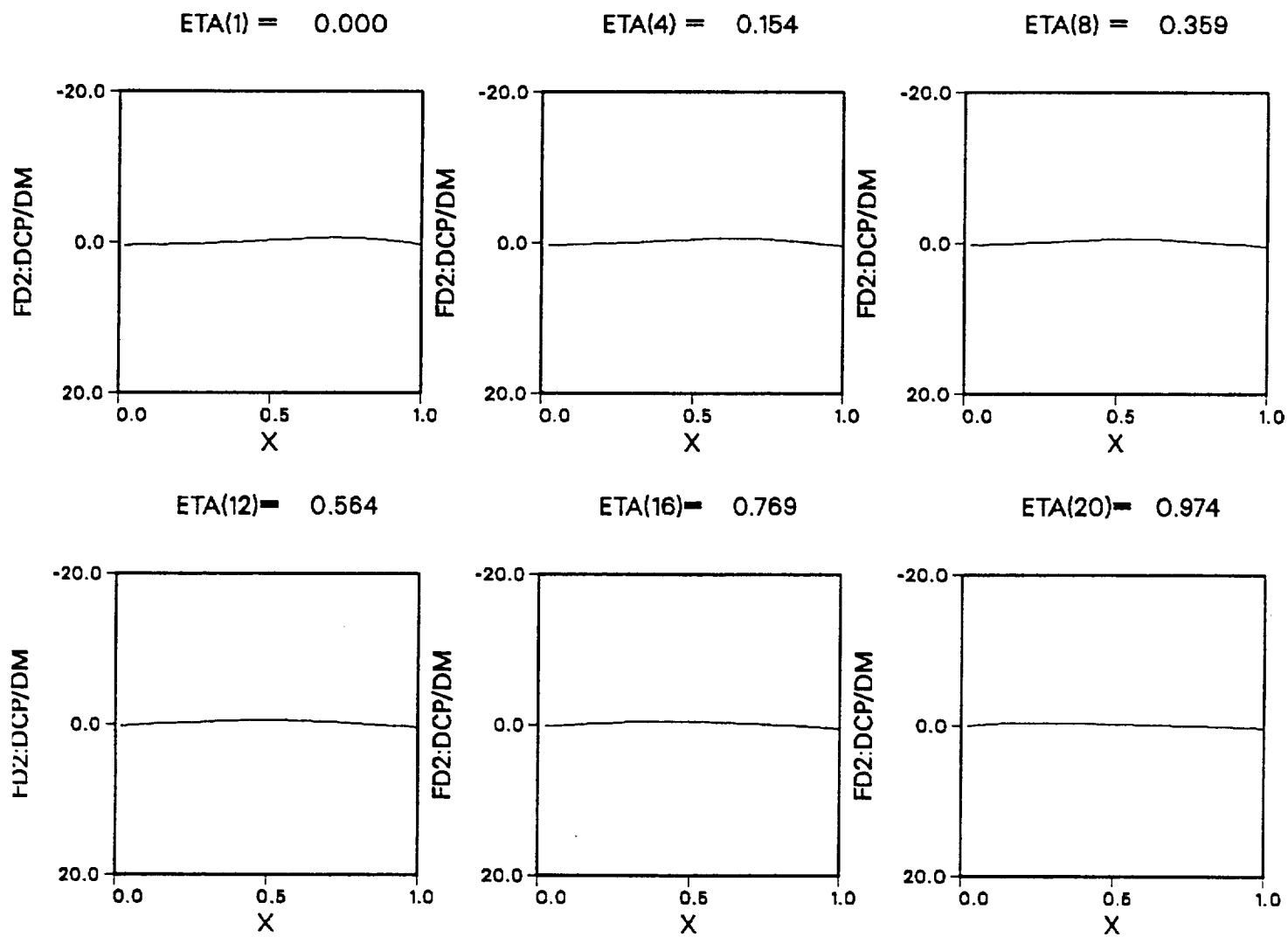


Figure (3)

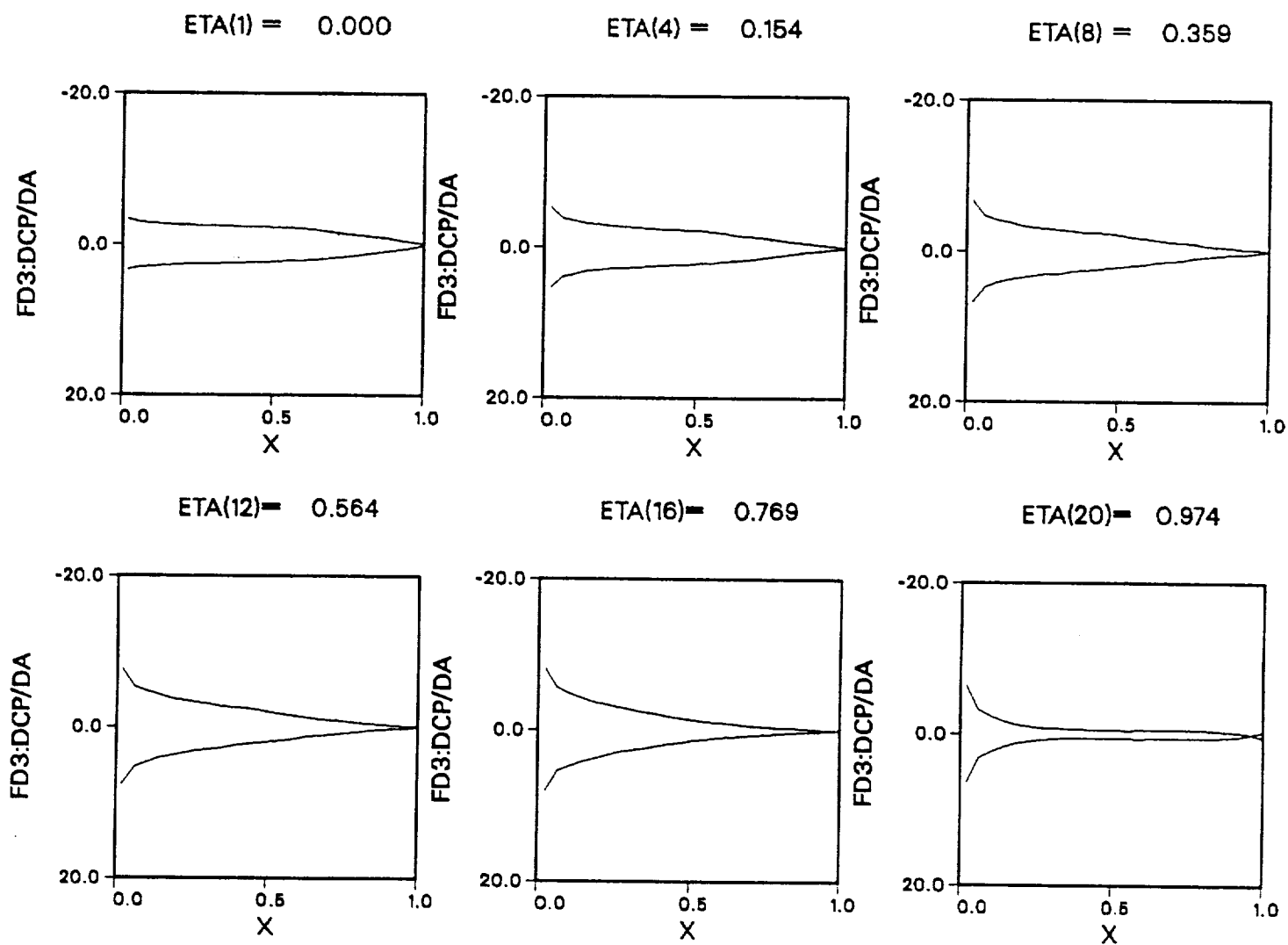
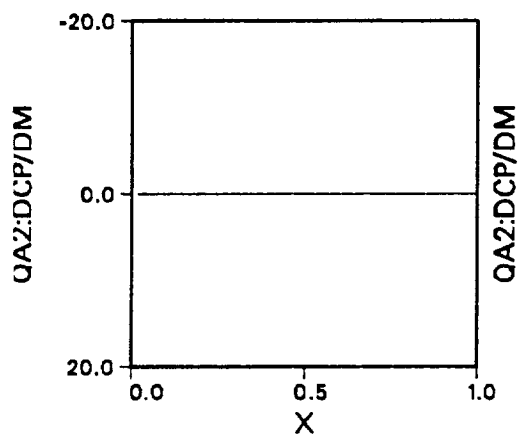
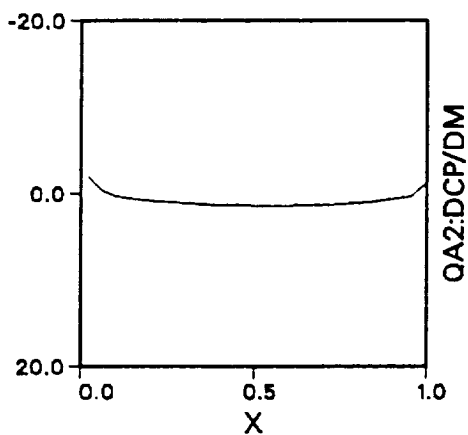


Figure (4)

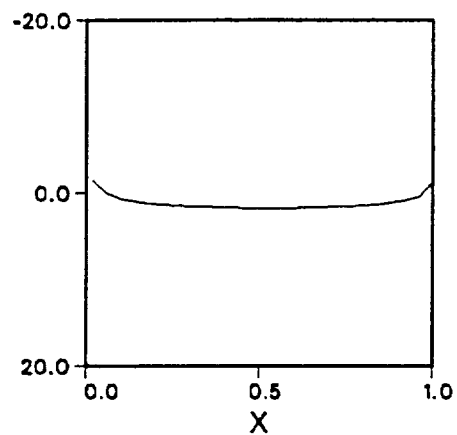
ETA(1) = 0.000



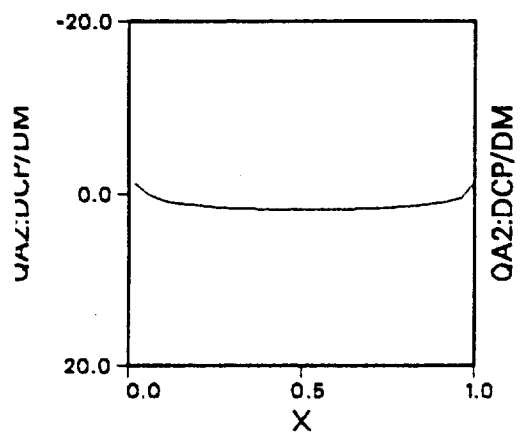
ETA(4) = 0.154



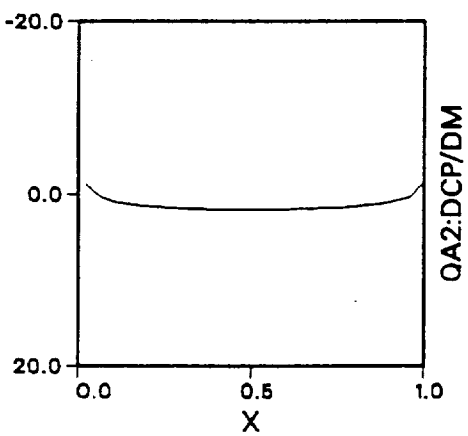
ETA(8) = 0.359



ETA(12) = 0.564



ETA(16) = 0.769



ETA(20) = 0.974

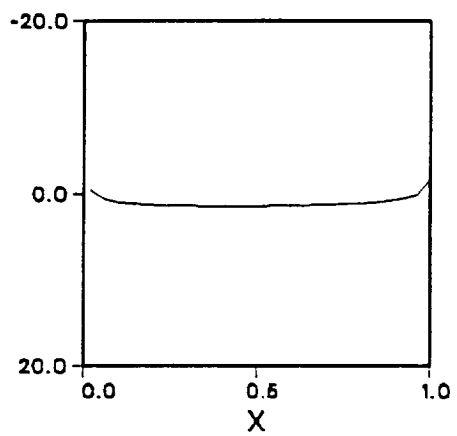


Figure (5)

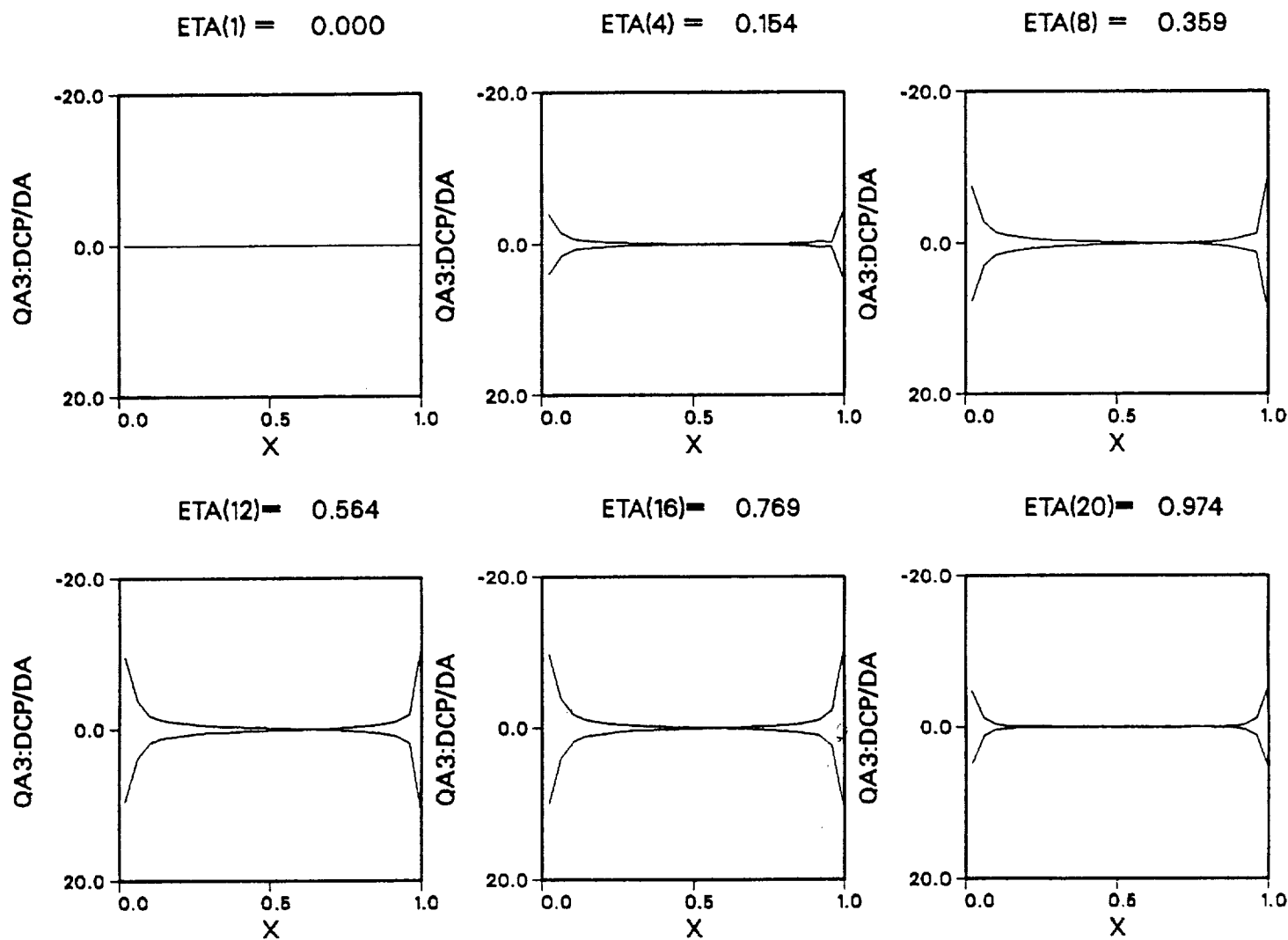


Figure (6)

